S
629.1309
A5sa
1960

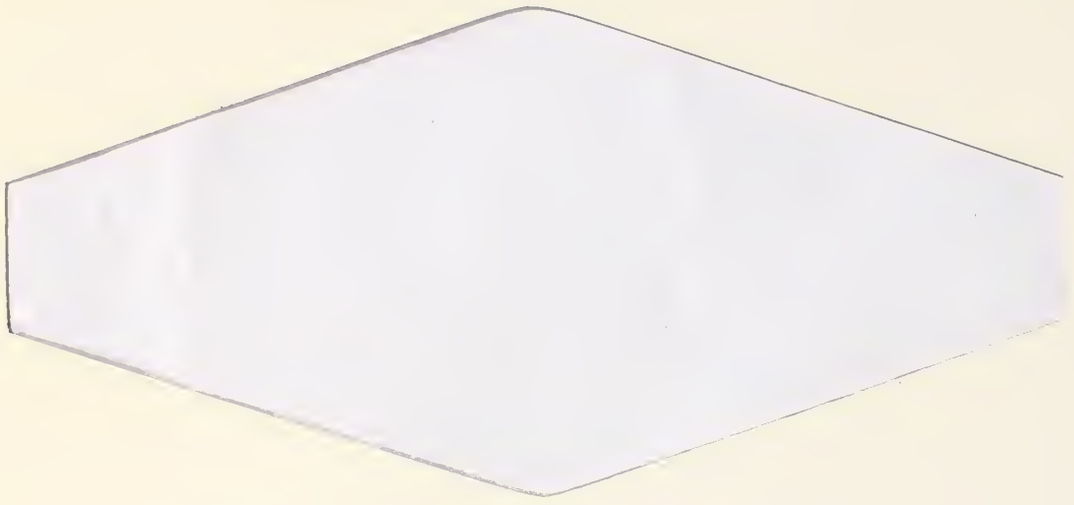
SURVEY AND ANALYSIS OF SCHEDULED AIR TRANSPORTATION IN MONTANA 1960 - 1980

[illegible]NHALL
[illegible] 406 587-4461

MAILING ADDRESS
ZAP INC.
P.O. BOX 471

BOZEMAN, MONTANA 59715

Montana State Library
3 0864 1006 7746 0



RECEIVED
DEC 30 1968
STATE PLANNING BOARD
Referred to .....

Copy 2
S 629.1309/A5Sa

SURVEY AND ANALYSIS OF SCHEDULED AIR TRANSPORTATION IN MONTANA 1960 - 1980

"This study was conducted by T.A.P., Inc., under contract with the Montana Aeronautics Commission. The statements, findings, conclusions, recommendations, and other data in this report are solely those of the Contractor and do not necessarily reflect the views of the Montana Aeronautics Commission."

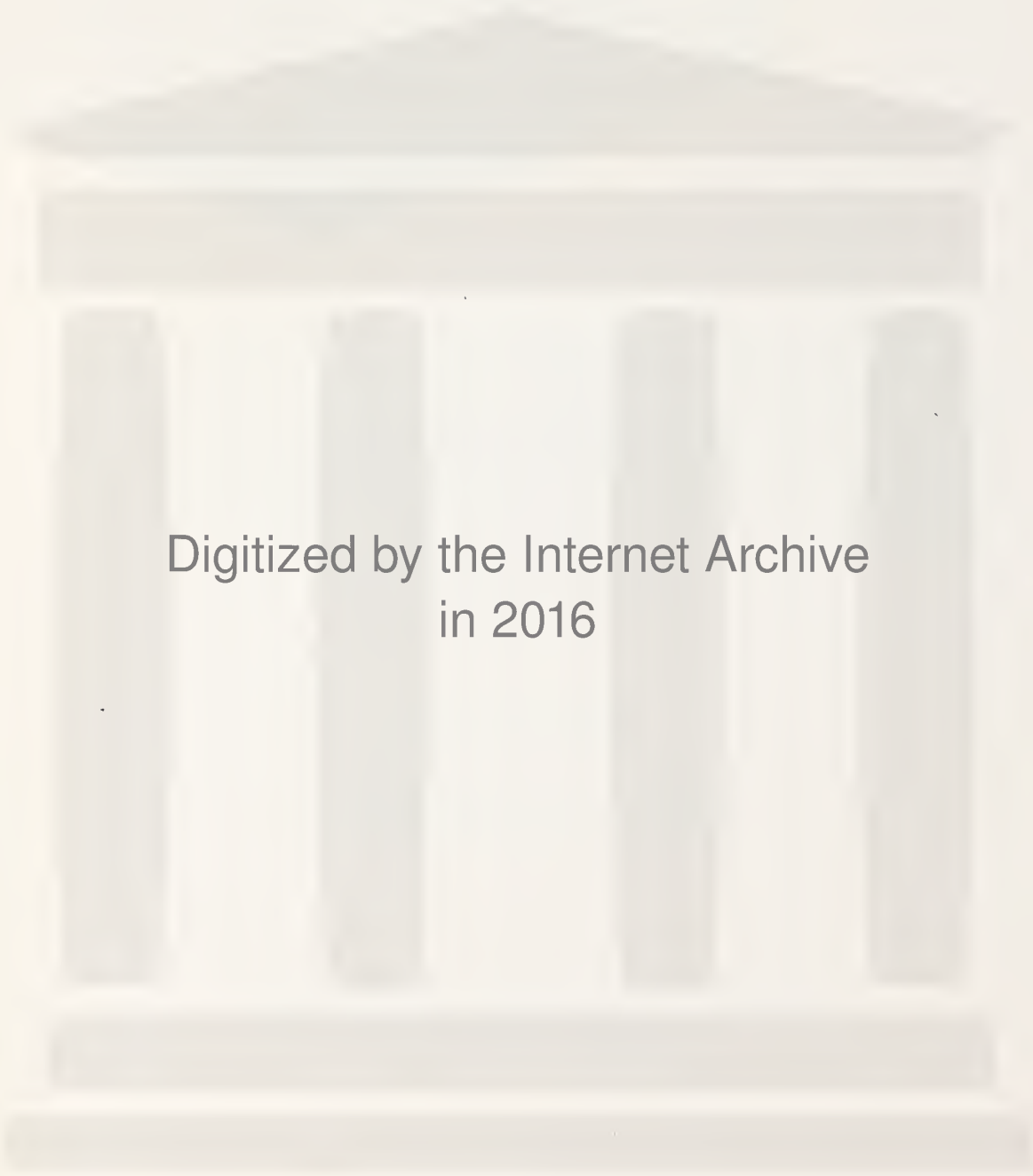
Submitted By

T.A.P., Incorporated
Bozeman, Montana 59715

To

Montana Aeronautics Commission
Helena, Montana

December 1968


Digitized by the Internet Archive
in 2016

https://archive.org/details/surveyanalysisof1968tapi

ACKNOWLEDGMENTS

Several groups and individuals contributed much to this study and to the preparation of this report. Particular acknowledgment is gratefully given to the following, without whose valuable contributions of advice and assistance this report would not have been possible: Air West, Frontier Airlines, Northwest Airlines, Western Airlines, Combs Airways, Commute Air, Beech Aircraft Corporation, Cessna Aircraft Company, de Havilland Aircraft of Canada, Ltd., North American Rockwell Corporation, Piper Aircraft Corporation, Montana's airport managers, Montana's airport boards and commissions, Montana's local Chambers of Commerce, the Civil Aeronautics Board, and the Federal Aviation Agency.

Finally, special acknowledgment is given to Governor Tim Babcock, Governor of the state of Montana, the Montana Aeronautics Commission and its members: E. B. Cogswell, Clarence R. Anthony, Robert H. Howe, Carl W. Bell, Gordon R. Hickman, Walter Hope, Jack R. Hughes, the director and assistant director of the Commission, Charles A. Lynch and James H. Monger respectively and their technical and professional staff. Additionally, the contractor extends a sincere thanks to Henry Loble for the invaluable consultation time he made available.

Although this study has benefited from many helpful suggestions and has borrowed freely from the ideas of many individuals, the authors assume full responsibility for the analysis and results presented.

TABLE OF CONTENTS

CHAPTER 1

MONTANA'S GENERAL ECONOMIC PROFILE 1

Introduction 3

Montana's Population, 1950 to 1960 5

Montana Population Projections 6

Evaluation of Population Projections 12

Montana's Population Projections by Trade Area 12

Montana's Income 17

Projected Labor Force by Sector in Each Trade Area 1960 - 1980 19

Household Incomes 1964 by County by Trade Area 36

General Trends in Labor Force Projections 42

Billings Trade Area 46

Great Falls Trade Area 47

Trade Areas of Missoula and Kalispell 49

Bozeman and Livingston Trade Areas 50

Butte and Anaconda Trade Areas 52

Helena Trade Area 53

The Trade Areas Containing the Seven Small Service Centers and Rural Communities of Eastern Montana . . . 54

Conclusion 57

CHAPTER 2

THE PAST AND PRESENT AIR SERVICE IN MONTANA AND RELATED MATTERS 59

Historic Origin and Destination Traffic 62

Regional Origination and Destination Traffic Analysis 66

Major Air Markets 84

Analysis of In-State Traffic 90

Telephone and Community Interest Analysis 97

Air Fare Analysis 102

Competitive Forms of Transportation 106

CHAPTER 3

TRAFFIC PROJECTIONS 113

Traffic Projections for Montana 115

The Use of Statistical Models in Projections . . 115

Traffic Projections for Billings, Montana 119

Traffic Projections for Great Falls, Montana 123

Traffic Projections for Great Falls Including All Portions of International Journey 129

Traffic Projections for Great Falls, Montana, Excluding All Portions of International Journey 132

Traffic Projections for Helena, Montana 136

The Relationship of the Western Montana Service Investigation Case to Traffic Projections and Forecasts for Bozeman, Missoula, and Butte 140

Traffic Projections for Bozeman, Montana 141

Traffic Projections for Missoula, Montana 146

Traffic Projections for Butte, Montana 150

Traffic Projections for the Eight Smaller Cities . . 154

Traffic Projections for West Yellowstone, Montana . . 159

Revised Origin and Destination Traffic 1966/1967 . . 163

Conclusions and Traffic Projections for the State of Montana to 1980 166

CHAPTER 4

THE POSSIBLE ROLE OF THIRD LEVEL AIR CARRIERS IN MONTANA 173

The Example Commuter System Tested 183

Assumptions Basic to Projected Costs 197

CHAPTER 5

A HISTORICAL ANALYSIS OF AIR CARGO MOVEMENT IN MONTANA WITH PROJECTIONS TO 1980 221

CHAPTER 6

AIRPORT FACILITY NEEDS 245

Future Runway Needs 249

Apron and Navigational Needs 250

Present and Future Terminal Needs 250

Butte Needs 251

Kalispell Needs 252

Conclusion 252

CHAPTER 7

A RECOMMENDED PATTERN FOR THE DEVELOPMENT OF MONTANA'S AIR TRANSPORTATION SYSTEM 255

Introduction 257

Air System Development for Montana 257

Montana Air System - Suggested Improvements in Competitive Structure 264

Montana Air System - Service Improvement Priorities . 265

Improved Service to California and Salt Lake City 265

Improved Service to the Kalispell Area 266

Improved Service to the Eastern Montana Cities . 266

Improved Service to the Capitol 268

Improved Service to Denver 268

Conclusion 269

TABLE OF TABLES

CHAPTER 1

1. Population of Montana Counties, 1930 - 1960 . . . 7

2. Montana Population Projections to 1980 10

3. Trade Area Population, 1960 and Projections for 1975 and 1980 15

4. Projected Percentage Changes in Trade Area Population, Montana, 1960 to 1975, 1980 16

5. Personal and Per Capita Income, Montana, 1960 to 1980 18

6. Billings Trade Area Labor Forces by Sectors, 1950, 1960 and Projections to 1980 20

7. Great Falls Trade Area Labor Forces by Sectors, 1950, 1960 and Projections to 1980 21

8. Missoula Trade Area Labor Forces by Sectors, 1950, 1960 and Projections to 1980 22

9. Kalispell Trade Area Labor Forces by Sectors, 1950, 1960 and Projections to 1980 23

10. Bozeman Trade Area Labor Forces by Sectors, 1950, 1960 and Projections to 1980 24

11. Livingston Trade Area Labor Forces by Sectors, 1950, 1960 and Projections to 1980 25

12. Helena Trade Area Labor Forces by Sectors, 1950, 1960 and Projections to 1980 26

13. Butte Trade Area Labor Forces by Sectors, 1950, 1960 and Projections to 1980 27

14. Anaconda Trade Area Labor Forces by Sectors, 1950, 1960 and Projections to 1980 28

15. Lewistown Trade Area Labor Forces by Sectors, 1950, 1960 and Projections to 1980 29

16. Glasgow Trade Area Labor Forces by Sectors, 1950, 1960 and Projections to 1980 30

17. Havre Trade Area Labor Forces by Sectors, 1950, 1960 and Projections to 1980 31

18. Wolf Point Trade Area Labor Forces by Sectors, 1950, 1960 and Projections to 1980 32

19. Sidney Trade Area Labor Forces by Sectors, 1950, 1960 and Projections to 1980 33

20. Glendive Trade Area Labor Forces by Sectors, 1950, 1960 and Projections to 1980 34

21. Miles City Trade Area Labor Forces by Sectors, 1950, 1960 and Projections to 1980 35

22. Percentage of Households in Income Categories by Trade Area by County, 1964 37

23. Personal Income Per Employee by Sector Projected to 1975 42

CHAPTER 2

1. Summary of Regions Important to State of Montana, 1963, 1964, 1965, 1966 78

2. Directional Traffic For Montana Cities 79

3. Major Out-of-State City Markets for Montana, 1965, 1966, and 1967 85

4. Major Out-of-State State Markets for Montana, 1965, 1966 87

5. Major Rotating Terminal Points for Montana Cities, 1967 88

6. Summary of Major Out-of-State City Markets for Montana, 1967 89

7. Summary of Air Travel Between Eight Smaller Cities and Billings and Great Falls 91

8. Summary of Air Travel Between Four Major Montana Cities and Billings and Great Falls 92

9. Major Rotating Terminal Points for Intrastate Air Travel 95

10. Air Traffic Between Eight Smaller Cities and Major Montana Markets Other than Billings and Great Falls 96

11. Phone Exchanges Between City Pairs in Montana in Order of Total Importance 98

12. "Big Six" Telephone Analysis by Region and State 99

13. Importance of Major Montana Cities and Out-of-State Cities to Businesses in the Eight Smaller Montana Cities 100

14. Mode of Transportation Used by Businesses of the Eight Smaller Montana Cities to Reach Other Montana Markets 101

15. Number of Visits by In-State and Out-of-State Business Representatives to Selected Montana Cities, 1967 102

16. Air Fare Expressed in Cents Per Statute Mile Between Montana City Pairs, June, 1968 103

17. Weighted Average Fare in Cents Per Statute Mile From the Following Cities to all other Montana Cities with Commercial Air Service, June, 1968 . 104

18. Air Fares Between Selected City Pairs in the United States, June 1968 105

19. Volume of Domestic Intercity Passenger Traffic, by Type of Transportation, Selected Years, 1940 - 1965 108

CHAPTER 3

1. Historic Origin and Destination Traffic for Billings, Montana, with Projections 1969 - 1980 on the Basis of Three Projection Models 121

2. Total Origin and Destination Traffic Reported as a Portion of International Journey in Great Falls Origin and Destination Statistics 126

3. Great Falls International Journey Traffic 127

4. Historic Origin and Destination Traffic for Great Falls, Montana, Including All Traffic Reported as Completing International Journey with Projections 1969 - 1980 on the Basis of Three Projection Models 130

5. Historic Origin and Destination Traffic for Great Falls, Montana, with Projections 1969 - 1980 on the Basis of Three Projection Models (All International Portion of Journey Removed) . 134

6. Historic Origin and Destination Traffic for Helena, Montana with Projections 1969 - 1980 on the Basis of Three Projection Models 138

7. Historic Origin and Destination Traffic for Bozeman, Montana, with Projections 1968 - 1980 on the Basis of Three Projection Models 144

8. Historic Origin and Destination Traffic for Missoula, Montana, with Projections 1969 - 1980 on the Basis of Three Projection Models 148

9. Historic Origin and Destination Traffic for Butte, Montana, with Projections 1968 - 1980 on the Basis of Three Projection Models 152

10. Historic Origin and Destination Traffic for Eight Smaller Cities in Montana, with Projections 1968 - 1980 on the Basis of Three Projection Models 156

11. Traffic Projections for the Eight Smaller Cities for 1980, Assuming No Major Service Improvements 159

12. Revised Origin and Destination Traffic 1966, 1967 for the Big Six Cities 164

13. Revised Origin and Destination Traffic 1966, 1967 for the Eight Smaller Cities 165

14. Historic Origin and Destination Traffic for the State of Montana with Projections 1969 - 1980 171

CHAPTER 4

1. Trends in Increased Activity of Third Level . . . 176

2. Percentage of Traffic Terminating Within Frontier's System in 1966 for Eastern Montana Cities 182

3. Summary of Commuter Routes Flown by Each Airplane 184

4. Summary of Flights and Their Respective Flight Times and Total Time Per Flight 185

5. Flight Schedules for Eastern Montana, Third Level Carrier Service 188

6. Flight Schedules for Central Montana, Third Level Carrier Service 189

7. Flight Schedules for Western Montana, Third Level Carrier Service 190

8. Third Level Carrier Service: Miles City, Glendive 192

9. Third Level Carrier Service: Sidney, Wolf Point 193

10. Third Level Carrier Service: Glasgow, Havre . . 194

11. Third Level Carrier Service: Kalispell, Lewistown 195

12. Summary of Operating Expenses 202

13. Traffic Projections 1970, 1975, and 1980 for the Seven Eastern Montana Cities assuming Improved Schedules as Included in Proposed Routes 204

14. Percent of Total Reservations made for Boarding at other Stations, Frontier Airlines, Second Quarter, 1968 208

15. Proposed fares as Compared to Costs by Auto from Seven Eastern Montana Cities to Great Falls, Billings, and Helena 211

16. Urban Areas, Ranked by Size, in Montana in 1975 . 218

17. Summary of Total Yearly Origin and Destination Traffic Per Round Trip which must be Maintained to Break Even on Flights of Varying Lengths . . . 220

CHAPTER 5

1. Freight, Express, and Mail Originations for Seven Montana Cities, Fiscal Years 1962 to 1966 224

2. Freight, Express, and Mail Originations for Seven Montana Cities, Fiscal Years 1962 to 1966 225

3. Freight, Express, and Mail Dispatched from all Montana Cities on Scheduled Air Service for Fiscal Years Ending June 30. (1962 - 1966) 226

4. Projected Rate of Growth (for Domestic Freight, Mail, and Express to 1980) Lockheed Aircraft Corporation 243

5. Projections for Freight, Mail, and Express for the State of Montana 1970 to 1980 244

CHAPTER 6

1. Airport Facility Needs By City for the Present and 1980 253

TABLE OF FIGURES

CHAPTER 1

1. Montana's Population 1930 - 1960 with Projections to 1980 11

2. Montana Trade Areas 13

CHAPTER 2

1. State of Montana, Total Yearly Origin and Destination Traffic 64

2. State of Montana, Total Quarterly Origin and Destination Traffic 65

3. Total O & D Traffic by Region by Year Billings, Montana 69

4. Total O & D Traffic by Region by Year Great Falls, Montana 70

5. Total O & D Traffic by Region by Year Helena, Montana 71

6. Total O & D Traffic by Region by Year Bozeman, Montana 72

7. Total O & D Traffic by Region by Year Butte, Montana 73

8. Total O & D Traffic by Region by Year Missoula, Montana 74

9. Total O & D Traffic by Region by Year Nine Smaller Cities 75

10. Total O & D Traffic by Region by Year State of Montana 76

11. Directional Traffic for Montana Cities 83

12. Summary of Air Travel Between Eight Smaller Cities and Billings and Great Falls 93

CHAPTER 3

1. Projected Origin and Destination Traffic for Billings, Montana, 1969 - 1980 122

2. Projected Origin and Destination Traffic for Great Falls, Montana, including International, 1969 - 1980 131

3. Projected Origin and Destination Traffic for Great Falls, Montana, excluding International, 1969 - 1980 135

4. Projected Origin and Destination Traffic for Helena, Montana, 1969 - 1980 139

5. Projected Origin and Destination Traffic for Bozeman, Montana, 1969 - 1980 145

6. Projected Origin and Destination Traffic for Missoula, Montana, 1969 - 1980 149

7. Projected Origin and Destination Traffic for Butte, Montana, 1968 - 1980 153

8. Projected Origin and Destination Traffic for the Eight Smaller Cities in Montana, 1968 - 1980 157

9. Projected Origin and Destination Traffic for West Yellowstone, Montana, 1968 - 1980 162

CHAPTER 4

1. Management and Organizational Structure Assumed for Budgeting Costs on Proposed Commuter Routes . 196

2. Trade Area Population, 1960 and 1975 206

CHAPTER 5

1. On Line Revenue Traffic - Freight and Express Originations - State of Montana (Fiscal 1962-1966) . 227

2. On Line Revenue Traffic - Total U.S. Mail Originations - State of Montana (Fiscal 1962 - 1966) . . 228

3. On Line Revenue Traffic - Freight and Express Originations - Billings (Fiscal 1962 - 1966) . . 230

4. On Line Revenue Traffic - Total U.S. Mail Originations - Billings (Fiscal 1962 - 1966) . . 231

5. On Line Revenue Traffic - Freight and Express Originations - Great Falls (Fiscal 1962 - 1966) 232

6. On Line Revenue Traffic - Total U.S. Mail Originations - Great Falls (Fiscal 1962 - 1966) 233

7. On Line Revenue Traffic - Freight and Express Originations - Butte (Fiscal 1962 - 1966) 234

8. On Line Revenue Traffic - Total U.S. Mail Originations - Butte (Fiscal 1962 - 1966) 235

9. On Line Revenue Traffic - Freight and Express Originations - Missoula (Fiscal 1962 - 1966) . . 236

10. On Line Revenue Traffic - Total U.S. Mail Originations - Missoula (Fiscal 1962 - 1966) . . 237

11. On Line Revenue Traffic - Freight and Express Originations - Helena (Fiscal 1962 - 1966) . . . 238

12. On Line Revenue Traffic - Total U.S. Mail Originations - Helena (Fiscal 1962 - 1966) . . . 239

13. On Line Revenue Traffic - Freight and Express Originations - Bozeman (Fiscal 1962 - 1966) . . . 240

14. On Line Revenue Traffic - Total U.S. Mail Originations - Bozeman (Fiscal 1962 - 1966) . . . 241

CHAPTER 7

1. Recommended Montana Air Transportation System . . 261

CHAPTER 1

MONTANA'S GENERAL ECONOMIC PROFILE

INTRODUCTION

Commercial air service and transportation, both national and international, for passengers, freight, express, and mail are likely to grow in the future at astonishing rates. Measured against any standard one chooses to employ -- against the annual growth rate in passenger revenue miles, the annual growth rate in ton revenue miles, the annual increases in investment of airlines in new equipment, or investment of aircraft manufacturers in research and development, the picture is indelibly clear. The airlines, the aircraft manufacturers, the nation, the states and the cities, both large and small, each in its own way are attempting to meet the anticipated demands for air service.

Montana with its great expanses and relatively few people finds itself in the midst of these developments. With an area of approximately 147,000 square miles, it is exceeded in geographical size only by Alaska, Texas, and California. A concept of the size of Montana is gained when it is realized that its land area exceeds that of the six New England states, New York, New Jersey, Maryland, and Delaware combined. This great size and small population mean that the people are sparsely distributed over the State - approximately 4.6 people per square mile. Not only are the people of Montana far removed from major out-of-state markets and large population centers, but they are relatively great distances away from their own larger cities within the State. Even though in 1960 seven of Montana's fifty-six counties, Cascade, Flathead, Gallatin, Lewis and Clark, Missoula, Silver Bow, and Yellowstone, contained approximately fifty percent of Montana's population, the remaining fifty percent were relatively isolated.

MONTANA'S POPULATION, 1950 to 1960

According to the final report of the Bureau of Census, Montana's population increased by 14.2 percent from 1950 to 1960. During that ten year period it increased from 591,000 to 675,000, and the most recent intercensus estimate for the year 1967 is 701,000.

Between the two census periods, 1950 and 1960, the rate of increase of Montana's population did not keep pace with the nation as a whole, which experienced an increase of 18.5 percent. Nevertheless, Montana's rate of increase did exceed the rate of growth of its bordering states - Idaho, Wyoming, North and South Dakota.

Until 1960, Montana's rural population exceeded its urban population. However, the 1960 census clearly shows that Montana is passing from a rural to an urban state. Approximately 50.2 percent of the population in 1960 was classified as urban and 49.8 percent as rural.

The average growth figure for the State tends to obscure the wide differences in population growth in the various counties of the State. Based on the 1960 census data, the range is from a net loss of 18.8 percent in Carbon County to a net gain of 50.4 percent in Valley County.[1] Fifteen counties in Montana exceeded the growth of the State while eleven counties showed moderate increases of 2.5 to 14.1 percent, and seven counties maintained a relatively stable population showing neither a net loss nor a net gain of more than 2.5 percent. The remaining twenty-three counties showed net losses exceeding 2.5 percent.

A critical examination of the pattern of population growth of the various counties is quite revealing. In the intermountain area of the State, eight counties have shown consistent increases for each census period since 1930. Two counties, Lake and Ravalli, showed a decrease in the ten year period, 1950 to 1960, but this was a reversal of the general trend for each since 1930. Six other intermountain counties have shown alternate increases or decreases. For

---

[1]Valley County population was greatly increased by the Glasgow Air Force Base in the decade 1950 to 1960. Since then, the base has been de-activated.

four of these, 1950 to 1960 was a period of increase and for two, Broadwater and Madison, it was a period of decrease. Only one intermountain county, Silver Bow, showed a consistent decrease during the thirty year period, and one county, Sanders, remained stable with the present population falling slightly below the highest population reached during the thirty year period.

In the plains area of the State, however, only four counties have shown a consistent increase since 1930. Six counties have alternated between increases and decreases, never establishing a consistent trend. Five of these counties increased in the period between 1950 and 1960, and one county, Rosebud, decreased. Six counties stabilized their population in the 1950 to 1960 decade. Of the remaining twenty-two counties, seventeen have shown consistent decreases during this period, while five of the counties showed increases for the decade of 1950 to 1960. However, the increases of the latter represents a reversal of the long term downward trend during the twenty year period, 1930 to 1950. This makes a total of twenty-six counties in the plains area where the long range trend in population growth has been generally downward. Table 1:1 summarizes the above information for the period 1930 to 1960.

MONTANA POPULATION PROJECTIONS

A number of private and public agencies have made population projections for the state of Montana. These projections have been for different future dates, and were made under different guide-lines and sets of assumptions. For example, the Montana Tax Study projection is for the year 1970, while the Upper Midwest Study projection is for 1975. The North Star Research and Development Institute projection is for 1976. All three projections used the 1950, 1960, and other *Census of Population* data as their base.

The most recent projection, that of the Montana Tax Study (Projection-1), estimates a population of 771,000 for Montana in 1970. The basic assumptions underlying this projection are that no major economic disruptions, either of a depressing nature or an increased developmental nature, will take place in Montana during this time period. In addition, the birth rates, death rates, and migration rates for the period 1960 to 1970 are assumed to equal those that existed during the period 1950 to 1960.

Table 1:1. Population of Montana Counties, 1930 - 1960*

	1960	1950	1940	1930
The State	674,767	591,024	559,456	537,606
Beaverhead	7,194	6,671	6,943	6,654
Big Horn	10,007	9,824	10,412	8,543
Blaine	8,091	8,516	9,566	9,006
Broadwater	2,804	2,922	3,451	2,738
Carbon	8,317	10,241	11,865	12,571
Carter	2,493	2,798	3,280	4,136
Cascade	73,418	53,027	41,999	41,146
Chouteau	7,348	6,974	7,316	8,635
Custer	13,227	12,661	10,422	11,242
Daniels	3,755	3,946	4,563	5,553
Dawson	12,314	9,092	8,618	9,881
Deer Lodge	18,640	16,553	13,627	16,293
Fallon	3,997	3,660	3,719	4,568
Fergus	14,018	14,015	14,040	16,531
Flathead	32,965	31,495	24,271	19,200
Gallatin	26,045	21,902	18,269	16,124
Garfield	1,981	2,172	2,641	4,252
Glacier	11,565	9,645	9,034	5,297
Golden Valley	1,203	1,337	1,607	2,126
Granite	3,014	2,773	3,401	3,013
Hill	18,653	14,285	13,304	13,775
Jefferson	4,297	4,014	4,664	4,133
Judith Basin	3,085	3,200	3,655	5,238
Lake	13,104	13,835	13,490	9,541
Lewis and Clark	28,006	24,540	22,151	18,224
Liberty	2,624	2,180	2,209	2,198
Lincoln	12,537	8,693	7,882	7,089
Madison	5,211	5,998	7,292	6,323
McCone	3,321	3,258	3,798	4,790
Meagher	2,616	2,079	2,237	2,272
Mineral	3,037	2,081	2,135	1,626
Missoula	44,663	35,493	29,038	21,782
Musselshell	4,888	5,408	5,717	7,242
Park	13,168	11,999	11,566	10,922
Petroleum	894	1,026	1,083	2,045
Phillips	6,029	6,334	7,892	8,208
Pondera	7,653	6,392	6,716	6,964
Powder River	2,485	2,693	3,159	3,909
Powell	7,002	6,301	6,152	6,202
Prairie	2,318	2,377	2,410	3,941

Table 1:1. (cont.)

	1960	1950	1940	1930
Ravalli	12,341	13,101	12,978	10,315
Richland	10,504	10,366	10,209	9,633
Roosevelt	11,731	9,580	9,806	10,672
Rosebud	6,187	6,570	6,477	7,347
Sanders	6,880	6,983	6,926	5,692
Sheridan	6,458	6,674	7,814	9,869
Silver Bow	46,454	48,422	53,207	56,969
Stillwater	5,526	5,416	5,694	6,253
Sweet Grass	3,290	3,621	3,719	3,944
Teton	7,295	7,232	6,922	6,068
Toole	7,904	6,867	6,769	6,714
Treasure	1,345	1,402	1,499	1,661
Valley	17,080	11,353	15,181	11,181
Wheatland	3,026	3,187	3,286	3,751
Wibaux	1,098	1,907	2,161	2,767
Yellowstone	79,016	55,875	41,182	30,785
Yellowstone Park (part)	47	58	43	52

*U.S. Department of Commerce, *1960 Census of Population*, Bureau of the Census, Vol. 1, Park 28, and Preceding Bureau of Census Estimates.

The Upper Midwest Economic Study forecasts a Montana population of 764,000 for the year 1975 (Projection-2). Here again, the census years of 1950 and 1960 were used as the base. But, an examination of the supporting data used by the UMES suggests that too few new nonagricultural jobs will be provided to sustain past urban population growth rates. This and other factors lead to the conclusion that the average annual percentage population increase from 1950 to 1960 of 1.33 percent will not be maintained, but will fall to 0.83 percent per year for the period 1960 to 1975.

The projection of the North Star Development and Research Institute (Projection-3) suggests that in 1976 Montana will have 856,000 residents. This projection simply assumes that the 1950 to 1960 dicennial rate of 14.2 percent will change to a dicennial rate of 16.1 percent.

The last projection (Projection-4) is a composite of the Montana Tax Study and the North Star projections (Projections 1 and 3).

In presenting an upper and a lower limit projection, it is believed that two reasonable and acceptable projections exist for the purpose. The Upper Midwest Economic Study projection of 764,000 by 1975, extrapolated to 1980 at an average annual increase of 0.83 percent serves as the lower limit. The most acceptable upper limit projection is the composite computed by taking the Montana Tax Study projection for 1970 of 771,000 and applying the dicennial increase of 16.1 percent used in the North Star projection. This results in an upper limit projection of 895,000 for 1980.

Past economic activity and growth tend to support the lower projection, particularly for the year 1970. Additional support for this projection is found in the Bureau of the Census estimate of 701,000 for the year 1967. If one projects the increase between 1960 and 1967 to 1970, then the UMES projection for 1975 as interpolated for the year 1970 could in fact be realized.

Table 1:2 summarizes the above projections and Figure 1:1 graphically illustrates the data. Estimates appearing in columns (a), (b), and (c) of the table are the basic projections for 1970, 1975, and 1976 respectively. Column (d) is the composite projection. Projection-2 [column (b)] serves as the lower limit projection and Projection-4 [column (d)] serves as the upper limit projection.

Table 1:2. Montana Population Projections to 1980* (to the nearest thousand)

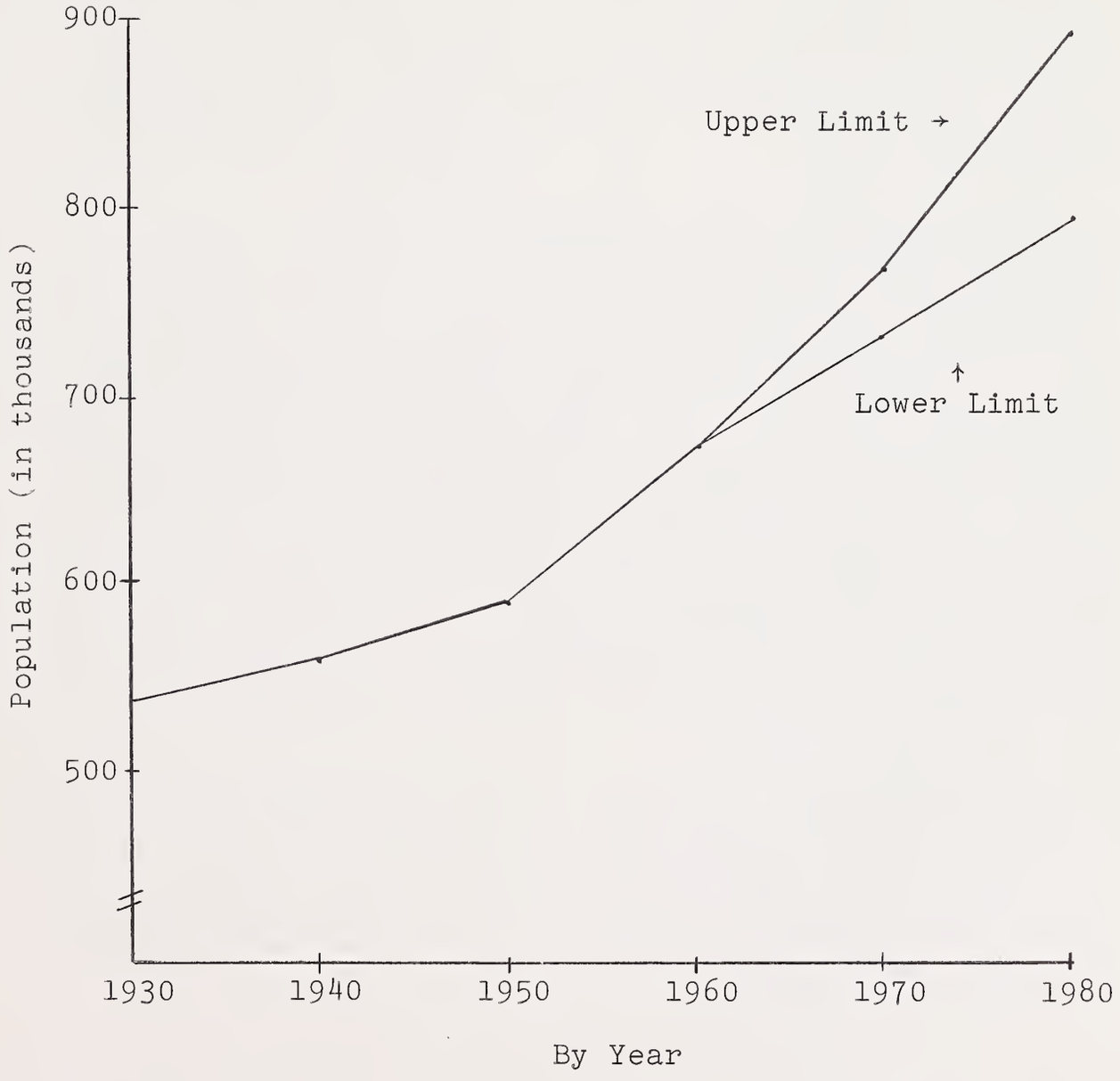
1950 (Bureau of the Census) - - - - - - - 591,000 - - - - - - - -

1960 (Bureau of the Census) - - - - - - - 675,000 - - - - - - - -

	Projection-1 (a)	Projection-2 (b)	Projection-3 (c)	Projection-4 (d)
1970	*771,000*	733,000	783,000	771,000
1971	-	730,000	795,000	783,000
1972	-	745,000	807,000	794,000
1973	-	751,000	819,000	806,000
1974	-	758,000	831,000	818,000
1975	-	*764,000*	844,000	831,000
1976	-	770,000	*856,000*	843,000
1977	-	776,000	-	856,000
1978	-	782,000	-	869,000
1979	-	788,000	-	882,000
1980	-	795,000	-	895,000

*Source: W.D. Diehl, *Montana Tax Study*, Vol. 1, Part Four, 1965-1966, p. 14; J.M. Henderson and A.O. Krueger, *National and Economic Change in the Upper Midwest*, University of Minnesota Press, 1965, p. 25; D.E. Roth and W.V. Williams, *Factors Influencing the Economic Growth Rate of Montana*, North Star Research and Development Institute, 1964, p. 8.

Figure 1:1. Montana's Population 1930 - 1960 with Projections to 1980.



EVALUATION OF POPULATION PROJECTIONS

Each of the above estimates necessarily reflects the critical assumptions made in support of the corresponding projection method. Some of the assumptions were rather simple while others, such as those of the Upper Midwest Economic Study group, were based on a critical examination of the many component parts and characteristics of the Montana economy.

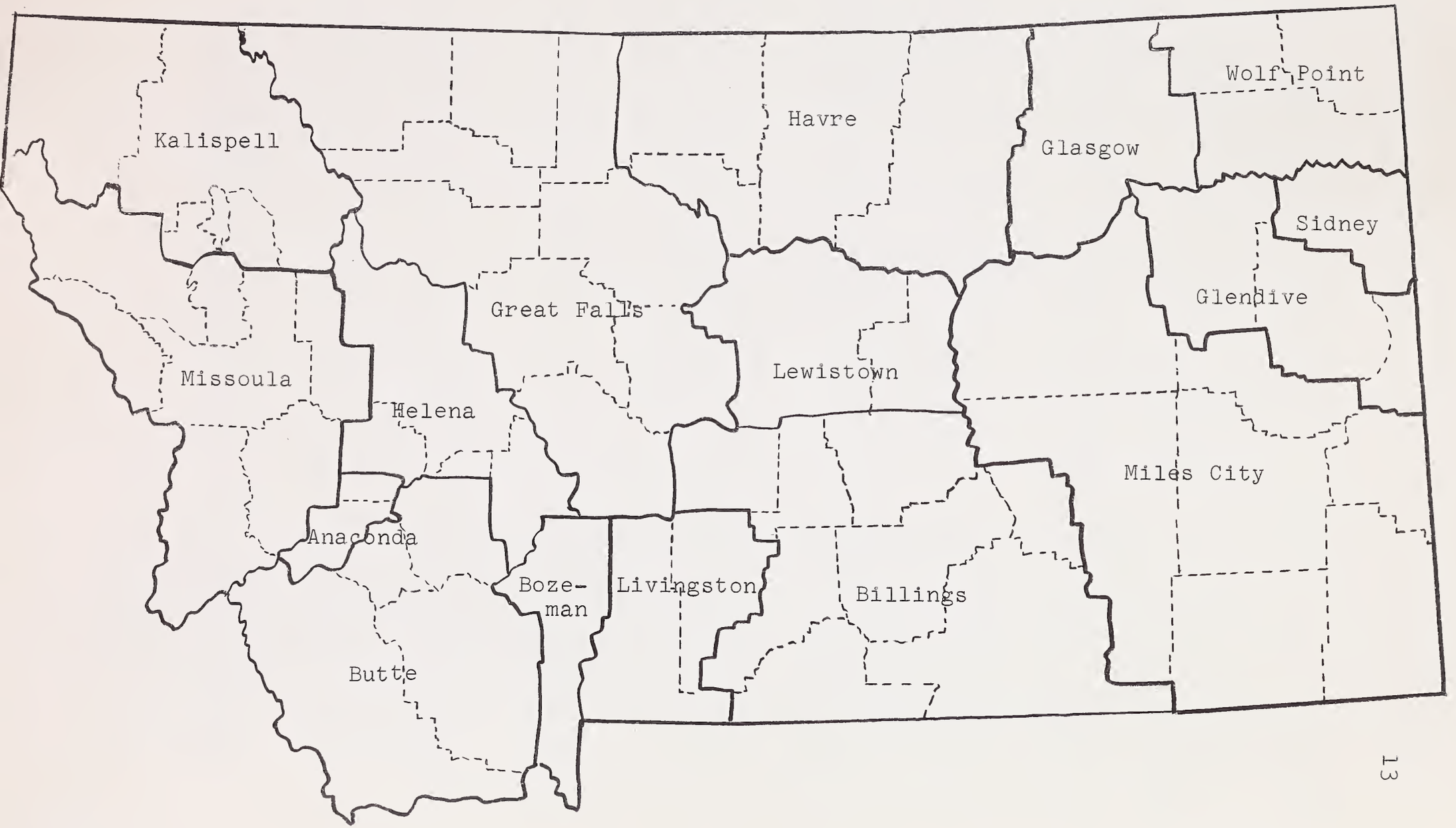
However, evidence of increased community and State interest in more rapid development of Montana suggests that projections based entirely on past growth and economic performance may be inadequate. The focus of attention being placed on community and regional planning and development, coordinated in the State offices of Planning and Economic Development, may cause the UMES population projection for the 1970's to be understated. The people of Montana are indicating more and more interest in working toward a balanced and accelerated economic development of the State. It is equally clear that many people outside Montana are viewing the State as a potential for investment and development opportunities. Development potential is definitely available in Montana. For these and other reasons the 1980 estimate by UMES could prove to be low. Nevertheless, the UMES projections are considered to serve adequately as a lower limit.

For the upper limit projection, the Montana Tax Study estimate for 1970 projected to 1980 at a dicennial rate of increase of 16.1 percent will adequately serve the purpose. This projection tends to incorporate the more optimistic outlook for the State, reflecting increased economic activity and/or employment in all sectors except mining, railroads, and agriculture.

MONTANA'S POPULATION PROJECTIONS BY TRADE AREA

Figure 1:2 shows a division of the State into sixteen trade areas, and the counties contained in each area. A trade area is defined as one which offers the contained

Figure 1:2. Montana Trade Areas.



population a complete shopping center; a definition also employed by the UMES.[2] One near-arbitrary decision regarding Montana trade areas was made for the northeastern region of the State. Daniels, Sheridan, and Roosevelt Counties were previously included by the UMES in the Williston, North Dakota trade area. However, it was decided to include them in the Wolf Point trade area for analytical purposes.

Because state-wide economic changes tend to obscure a variety of regional experiences, it is deemed desirable to examine population changes by trade area. Table 1:3 is a presentation of population data by trade area for 1960 with projections to 1975 and 1980.

Projections-1 and -2 are the lower and upper limit population projections respectively, found in Table 1:2, broken down by trade areas. Since specific trade area population data is not readily available for years beyond 1960, but labor force data is, it is here assumed that the relationship between population and labor force as projected by the UMES for 1975 will remain constant through the projection period. It is by this method that the trade area population projections are estimated.

In 1960 Great Falls and Billings were the two largest trade areas in Montana and they are expected to remain so in 1975 and 1980. The next three largest in terms of population were Missoula, Butte, and Kalispell in descending order. By 1980, it is predicted that these same three areas will be in the top five but Kalispell will have surpassed Butte.

For the remaining eleven trade areas, population projections for 1975 and 1980 indicate that the Helena area will emerge as number six. Sidney is projected to serve the smallest population by 1980.

Of considerably more interest are the projected percentage changes in area populations. This information is presented in Table 1:4. The Bozeman and Kalispell areas emerge as having the highest population growth rates, while the Wolf Point and Lewistown areas are projected to have the lowest. The data at the top of page 17 is a summary of the area growth rates between 1960 and 1980 using the lower limit population projections.

---

[2]See John R. Borchert and Russell B. Adams, *Trade Centers and Trade Areas of the Upper Midwest*, UMES Urban Report No. 3, (September, 1963).

Table 1:3. Trade Area Population, 1960 and Projections for 1975 and 1980*

Trade Area	1960	1975 Projections (1)	1975 Projections (2)	1980 Projections (1)	1980 Projections (2)
Kalispell	54,282	66,850	72,713	71,153	80,102
Missoula	76,570	91,146	99,138	96,116	108,205
Anaconda	23,331	24,295	26,426	24,725	27,834
Butte	61,738	67,003	72,878	68,847	77,507
Helena	32,228	36,137	39,306	37,524	42,244
Great Falls	123,508	141,340	153,735	147,552	166,112
Havre	32,771	33,463	36,399	34,583	38,932
Lewistown	14,912	15,127	16,454	14,469	16,289
Bozeman	26,045	32,394	35,234	34,583	38,933
Livingston	16,458	19,329	21,024	20,273	22,823
Glasgow	17,080	20,093	21,855	21,147	23,807
Billings	113,328	132,554	144,179	139,046	156,536
Sidney	10,504	11,307	12,299	11,607	13,067
Glendive	17,333	18,183	19,778	18,444	20,761
Miles City	32,688	33,158	36,065	33,390	37,590
Wolf Point	21,944	21,621	23,517	21,545	24,255
Total	674,720	764,000	831,000	795,000	895,000

*Source: Ibid., Diehl, W. D.; Henderson, J. M. and Krueger, A. O.; Roth, D. E.; population data distributed in accordance with Trade Area designation.

Table 1:4. Projected Percentage Changes in Trade Area Population, Montana, 1960 to 1975, 1980*

Trade Area	1960	1975 Projections (1)	1975 Projections (2)	1980 Projections (1)	1980 Projections (2)
Kalispell	54,282	23.2%	33.3%	31.5%	48.1%
Missoula	76,570	11.8%	29.2%	25.3%	41.2%
Anaconda	23,331	4.1%	11.3%	6.0%	19.3%
Butte	61,738	8.5%	18.0%	11.5%	25.5%
Helena	32,228	12.1%	21.9%	16.4%	31.1%
Great Falls	123,508	14.4%	24.4%	19.5%	34.4%
Havre	32,771	2.1%	11.1%	5.5%	18.8%
Lewistown	14,912	1.4%	10.3%	-3.0%	9.2%
Bozeman	26,045	24.4%	35.3%	32.8%	49.5%
Livingston	16,458	17.4%	27.7%	23.2%	38.7%
Glasgow	17,080	17.6%	28.0%	23.8%	39.4%
Billings	113,328	17.0%	27.2%	22.7%	38.1%
Sidney	10,504	7.6%	17.1%	10.5%	24.4%
Glendive	17,333	4.9%	14.1%	6.4%	19.8%
Miles City	32,688	1.4%	10.3%	2.1%	15.0%
Wolf Point	21,944	-1.5%	1.9%	-1.8%	10.5%

*Computed from data in Table 1:3.

TRADE AREAS

RAPID GROWTH RATE: 30% or more (1960-1980)	Kalispell, Bozeman
MODERATE GROWTH RATE: +10% to +29.9% (1960-1980)	Missoula, Glasgow, Livingston, Billings, Great Falls, Helena, Butte, Sidney
STABLE AREA POPULATION: -5% to +9.9% (1960-1980)	Glendive, Anaconda, Havre, Miles City, Wolf Point, Lewistown

MONTANA'S INCOME

Montana's present transition away from a natural resource base economy will continue. However, agriculture, forestry, and mining will not cease to be important as direct income generators, and will provide the important base for generating income in related activities, such as lumber products, primary metals, and food products.

Personal income, in the decade 1950 to 1960, increased in Montana from $1,177.4 million to $1,368.0 million. It is projected to increase by 1980 to $2,627.4 million. This is an increase of 3.28 percent per year for the period 1960 to 1980, compared with the annual growth rate of 1.50 percent for the period 1950 to 1960. All dollars are expressed in terms of a constant 1960 dollar value. Price level changes or inflation factors are not reflected in the dollar income estimates.

Per capita income (the last column of Table 1:5) shows an increase between 1960 and 1980 substantially in excess of the increase between 1950 and 1960. During the decade 1950 to 1960 the annual growth rate of per capita income was 0.17 percent, while for the period 1960 to 1980 it is projected to be 2.45 percent. The projected annual rate of increase in per capita income for Montana exceeds that of the surrounding states and is just under the projected national annual rate of 2.50 percent.

This more rapid rate of increase in per capita income is the result of productivity increases in virtually every

Table 1:5. Personal and Per Capita Income, Montana, 1960 to 1980, (1960 Dollars)*

Year	Personal Income (in millions)	Per Capita Income
1950	$1,177.4	$1,992
1960	1,368.0	2,027
1970	1,888.0	2,582
1975	2,237.0	2,927
1980	2,627.4	3,303

*Source: J. M. Henderson and Anne O. Krueger, *National Growth and Economic Change in the Upper Midwest*, University of Minnesota Press, Minneapolis, p. 26. Data beyond 1975 projected at annual rates for the period 1960 to 1975.

sector of Montana's economy and the consolidation process in farming and ranching. This consolidation process will undoubtedly continue, as will the productivity increases, due primarily to present trends toward increasing the resources with which each unit of labor works and increasing the quality of individual laboring units through increased education. Technological improvements will continue to force these changes on society. For these and many other reasons it seems only logical to assume significant productivity increases relative to labor input.

In the period 1954-1958 there were 35,150 farms and ranches in Montana. This total is projected to decrease at an annual rate of 0.92 percent, to a total number of 29,500 in 1975 and 25,330 in 1980. This process is likely to continue, unless federal programs are imposed to stop it, because economic conditions coupled with technological

improvements are continually forcing changes in farming and ranching patterns. It is unlikely that programs will be adopted to appreciably reduce the resulting net farm out-migration. Small, low income farmers who desire to remain in agriculture can, but the financial sacrifice will be great.

PROJECTED LABOR FORCE BY SECTOR IN EACH TRADE AREA 1960 - 1980

Projected changes in the labor force employed generally provide an acceptable index of changes in economic activity. Records and projections of trade area labor forces by sectors are available for the years 1950, 1960, and 1975 for seven major activity sectors and an unemployed sector. After careful examination of the data, it was chosen as the best possible approximation, and then projected to 1980 at rates of change established for the period 1960 to 1975.

The Wolf Point trade area required special attention. It was necessary to isolate the expected performance of Daniels, Roosevelt, and Sheridan Counties through a comparative analysis with expected economic performance in the surrounding counties, both in Montana and North Dakota.

The following tables, Table 1:6 to Table 1:21, present the projected labor force by sector for each of the sixteen trade areas and the same information as percentages of total labor force for the years 1950, 1960, 1970, 1975, and 1980.

Table 1:6. Billings Trade Area Labor Forces by Sectors, 1950, 1960 and Projections to 1980

Sector	1950	1960	1970	1975	1980
Agriculture	8,193	5,786	4,937	4,513	4,088
Mining and Oil	887	951	926	914	901
Manufacturing	2,330	3,789	4,496	4,849	5,203
Construction	2,492	2,613	3,154	3,425	3,695
Retail Trade	6,153	7,421	8,219	8,618	9,017
Wholesale Trade	1,720	2,202	2,356	2,433	2,510
Services & Govt.	11,933	17,009	20,676	22,509	24,343
Unemployed	1,795	2,631	2,892	3,022	3,153
Total	35,503	42,402	47,656	50,283	52,910
	Percentage Distribution				
Agriculture	23.1%	13.6%	10.4%	9.0%	7.7%
Mining and Oil	2.5%	2.2%	1.9%	1.8%	1.7%
Manufacturing	6.6%	8.9%	9.4%	9.6%	9.8%
Construction	7.0%	6.2%	6.6%	6.8%	6.9%
Retail Trade	17.3%	17.5%	17.2%	17.1%	17.0%
Wholesale Trade	4.8%	5.2%	4.9%	4.8%	4.7%
Services & Govt.	33.6%	40.1%	43.4%	44.8%	46.0%
Unemployed	5.1%	6.2%	6.1%	6.0%	6.0%

Table 1:7. Great Falls Trade Area Labor Forces by Sectors, 1950, 1960 and Projections to 1980

Sector	1950	1960	1970	1975	1980
Agriculture	8,852	6,858	5,852	5,349	4,846
Mining and Oil	845	550	536	529	522
Manufacturing	3,397	3,890	4,038	4,112	4,186
Construction	2,346	2,885	3,207	3,368	3,529
Retail Trade	6,039	7,273	8,049	8,437	8,825
Wholesale Trade	1,266	1,512	1,689	1,777	1,866
Services & Govt.	13,918	20,410	24,674	26,805	28,938
Unemployed	1,707	2,570	2,825	2,953	3,080
Total	38,370	45,948	50,870	53,330	55,792
		Percentage Distribution			
Agriculture	23.1%	14.9%	11.5%	10.0%	8.7%
Mining and Oil	2.2%	1.2%	1.2%	1.0%	.9%
Manufacturing	8.9%	8.5%	7.9%	7.7%	7.5%
Construction	6.1%	6.3%	6.3%	6.3%	6.3%
Retail Trade	15.7%	15.8%	15.8%	15.8%	15.8%
Wholesale Trade	3.3%	3.3%	3.3%	3.3%	3.3%
Services & Govt.	36.3%	44.4%	48.5%	50.3%	51.9%
Unemployed	4.4%	5.6%	5.6%	5.5%	5.5%

Table 1:8. Missoula Trade Area Labor Forces by Sectors, 1950, 1960 and Projections to 1980

Sector	1950	1960	1970	1975	1980
Agriculture	4,931	3,175	2,709	2,476	2,243
Mining and Oil	317	317	308	303	299
Manufacturing	3,030	4,139	4,630	4,876	5,121
Construction	1,642	1,828	2,222	2,419	2,616
Retail Trade	3,991	4,445	5,037	5,333	5,629
Wholesale Trade	459	641	797	875	953
Services & Govt.	9,593	11,890	14,527	15,845	16,164
Unemployed	1,350	2,319	2,498	2,587	2,677
Total	25,313	28,754	32,728	34,714	35,702
		Percentage Distribution			
Agriculture	19.5%	11.0%	8.3%	7.1%	6.3%
Mining and Oil	1.3%	1.1%	.9%	.9%	.8%
Manufacturing	12.0%	14.4%	14.1%	14.0%	14.3%
Construction	6.5%	6.4%	6.8%	7.0%	7.3%
Retail Trade	15.8%	15.5%	15.4%	15.4%	15.8%
Wholesale Trade	1.8%	2.2%	2.4%	2.5%	2.7%
Services & Govt.	37.9%	41.3%	44.4%	45.6%	45.5%
Unemployed	5.3%	8.1%	7.6%	7.5%	7.5%

Table 1:9. Kalispell Trade Area Labor Forces by Sectors, 1950, 1960 and Projections to 1980

Sector	1950	1960	1970	1975	1980
Agriculture	2,920	1,728	1,475	1,348	1,222
Mining and Oil	149	186	181	179	186
Manufacturing	2,276	3,809	4,563	4,927	5,317
Construction	1,738	779	1,056	1,195	1,333
Retail Trade	2,587	3,089	3,573	3,815	4,057
Wholesale Trade	277	419	553	620	687
Services & Govt.	5,552	6,461	8,155	9,002	9,849
Unemployed	2,177	2,681	2,788	2,841	2,895
Total	17,676	19,152	22,344	23,927	25,546
		Percentage Distribution			
Agriculture	16.5%	9.0%	6.6%	5.6%	4.8%
Mining and Oil	.8%	1.0%	.8%	.7%	.7%
Manufacturing	12.9%	19.9%	20.4%	20.6%	20.8%
Construction	9.8%	4.1%	4.7%	5.0%	5.2%
Retail Trade	14.6%	16.1%	16.0%	15.9%	15.9%
Wholesale Trade	1.6%	2.2%	2.5%	2.6%	2.7%
Services & Govt.	31.4%	33.7%	36.5%	37.6%	38.6%
Unemployed	12.3%	14.0%	12.5%	11.9%	11.3%

Table 1:10. Bozeman Trade Area Labor Forces by Sectors, 1950, 1960 and Projections to 1980

Sector	1950	1960	1970	1975	1980
Agriculture	1,822	1,439	1,228	1,122	1,017
Mining and Oil	8	21	21	20	20
Manufacturing	575	830	947	1,005	1,064
Construction	513	498	637	707	776
Retail Trade	1,392	1,599	1,854	1,981	2,109
Wholesale Trade	183	277	345	379	413
Services & Govt.	3,400	4,556	5,810	6,437	7,064
Unemployed	226	380	440	470	500
Total	8,119	9,600	11,282	12,121	12,963
		Percentage Distribution			
Agriculture	22.4%	15.0%	10.9%	9.3%	7.8%
Mining and Oil	.1%	.2%	.2%	.2%	.2%
Manufacturing	7.1%	8.6%	8.4%	8.3%	8.2%
Construction	6.3%	5.2%	5.6%	5.8%	6.0%
Retail Trade	17.1%	16.7%	16.4%	16.3%	16.3%
Wholesale Trade	2.3%	2.9%	3.1%	3.1%	3.2%
Services & Govt.	41.9%	47.5%	51.5%	53.0%	54.5%
Unemployed	2.8%	4.0%	3.9%	3.9%	3.9%

Table 1:11. Livingston Trade Area Labor Forces by Sectors, 1950, 1960 and Projections to 1980

Sector	1950	1960	1970	1975	1980
Agriculture	1,695	1,225	1,046	956	867
Mining and Oil	61	24	24	23	23
Manufacturing	175	456	601	674	746
Construction	349	354	435	475	516
Retail Trade	1,003	1,078	1,198	1,258	1,318
Wholesale Trade	97	61	100	119	139
Services & Govt.	2,667	2,660	3,217	3,495	3,774
Unemployed	217	462	501	520	540
Total	6,264	6,320	7,122	7,520	7,923
		Percentage Distribution			
Agriculture	27.1%	19.4%	14.7%	12.7%	10.9%
Mining and Oil	1.0%	.4%	.3%	.3%	.3%
Manufacturing	2.8%	7.2%	8.4%	9.0%	9.4%
Construction	5.6%	5.6%	6.1%	6.3%	6.5%
Retail Trade	16.0%	17.1%	16.8%	16.7%	16.6%
Wholesale Trade	1.5%	1.0%	1.4%	1.6%	1.8%
Services & Govt.	42.6%	42.1%	45.2%	46.5%	47.6%
Unemployed	3.5%	7.3%	7.0%	6.9%	6.8%

Table 1:12. Helena Trade Area Labor Forces by Sectors, 1950, 1960 and Projections to 1980

Sector	1950	1960	1970	1975	1980
Agriculture	1,733	1,294	1,105	1,010	916
Mining and Oil	314	225	219	216	213
Manufacturing	1,064	1,131	1,131	1,132	1,132
Construction	1,192	1,103	1,266	1,347	1,429
Retail Trade	2,038	2,190	2,382	2,478	2,574
Wholesale Trade	221	259	305	328	351
Services & Govt.	6,267	7,520	8,552	9,069	9,584
Unemployed	397	693	783	828	873
Total	13,226	14,415	15,743	16,408	17,072
		Percentage Distribution			
Agriculture	13.1%	9.0%	7.0%	6.2%	5.4%
Mining and Oil	2.4%	1.6%	1.4%	1.3%	1.2%
Manufacturing	8.0%	7.8%	7.2%	6.9%	6.6%
Construction	9.0%	7.7%	8.0%	8.2%	8.4%
Retail Trade	15.4%	15.2%	15.1%	15.1%	15.1%
Wholesale Trade	1.7%	1.8%	1.9%	2.0%	2.1%
Services & Govt.	47.4%	52.2%	54.3%	55.3%	56.1%
Unemployed	3.0%	4.8%	5.0%	5.0%	5.1%

Table 1:13. Butte Trade Area Labor Forces by Sectors, 1950, 1960 and Projections to 1980

Sector	1950	1960	1970	1975	1980
Agriculture	3,005	2,378	2,029	1,855	1,680
Mining and Oil	6,269	3,520	3,427	3,380	3,334
Manufacturing	1,349	1,404	1,404	1,404	1,404
Construction	1,145	1,041	1,218	1,306	1,395
Retail Trade	4,223	3,795	4,024	4,138	4,253
Wholesale Trade	964	791	822	838	853
Services & Govt.	7,629	7,883	9,261	9,950	10,639
Unemployed	1,245	1,724	1,860	1,928	1,996
Total	25,829	22,536	24,045	24,799	25,554
		Percentage Distribution			
Agriculture	11.6%	10.6%	8.4%	7.5%	6.6%
Mining and Oil	24.3%	15.6%	14.3%	13.6%	13.0%
Manufacturing	5.2%	6.2%	5.8%	5.7%	5.5%
Construction	4.4%	4.6%	5.1%	5.3%	5.5%
Retail Trade	16.3%	16.8%	16.7%	16.7%	16.6%
Wholesale Trade	3.7%	3.5%	3.4%	3.4%	3.3%
Services & Govt.	29.5%	35.0%	38.5%	40.1%	41.6%
Unemployed	4.8%	7.6%	7.7%	7.8%	7.8%

Table 1:14. Anaconda Trade Area Labor Forces by Sectors, 1950, 1960 and Projections to 1980

Sector	1950	1960	1970	1975	1980
Agriculture	254	192	163	149	134
Mining and Oil	51	346	337	332	328
Manufacturing	3,096	2,401	2,334	2,300	2,267
Construction	146	168	163	161	158
Retail Trade	646	736	817	858	898
Wholesale Trade	28	38	42	44	46
Services & Govt.	1,939	2,441	2,679	2,799	2,918
Unemployed	184	376	417	438	458
Total	6,344	6,698	6,952	7,081	7,207
		Percentage Distribution			
Agriculture	4.0%	2.9%	2.3%	2.1%	1.9%
Mining and Oil	.8%	5.2%	4.8%	4.7%	4.6%
Manufacturing	48.8%	35.8%	33.6%	32.5%	31.5%
Construction	2.3%	2.5%	2.3%	2.3%	2.2%
Retail Trade	10.2%	11.0%	11.8%	12.1%	12.5%
Wholesale Trade	.4%	.6%	.6%	.6%	.6%
Services & Govt.	30.6%	36.4%	38.5%	39.5%	40.5%
Unemployed	2.9%	5.6%	6.0%	6.2%	6.4%

Table 1:15. Lewistown Trade Area Labor Forces by Sectors, 1950, 1960 and Projections to 1980

Sector	1950	1960	1970	1975	1980
Agriculture	2,334	1,688	1,440	1,316	1,192
Mining and Oil	130	73	72	71	71
Manufacturing	300	253	217	199	181
Construction	366	385	417	433	449
Retail Trade	949	880	873	870	866
Wholesale Trade	161	134	129	127	124
Services & Govt.	1,712	1,817	2,014	2,113	2,211
Unemployed	155	164	198	215	232
Total	6,107	5,394	5,360	5,344	5,326
		Percentage Distribution			
Agriculture	38.2%	31.3%	26.9%	24.6%	22.4%
Mining and Oil	2.1%	1.4%	1.3%	1.3%	1.3%
Manufacturing	4.9%	4.7%	4.0%	3.7%	3.4%
Construction	6.0%	7.1%	7.8%	8.1%	8.4%
Retail Trade	15.5%	16.3%	16.3%	16.3%	16.3%
Wholesale Trade	2.6%	2.5%	2.4%	2.4%	2.3%
Services & Govt.	28.0%	33.7%	37.6%	39.5%	41.5%
Unemployed	2.5%	3.0%	3.7%	4.0%	4.4%

Table 1:16. Glasgow Trade Area Labor Forces by Sectors, 1950, 1960 and Projections to 1980

Sector	1950	1960	1970	1975	1980
Agriculture	1,616	963	822	751	681
Mining and Oil	5	4	4	4	4
Manufacturing	54	114	144	159	174
Construction	533	914	864	839	814
Retail Trade	630	927	1,076	1,150	1,225
Wholesale Trade	87	94	138	160	182
Services & Govt.	1,222	3,093	3,871	4,261	4,649
Unemployed	236	467	499	515	531
Total	4,383	6,576	7,418	7,839	8,260
		Percentage Distribution			
Agriculture	36.9%	14.6%	11.1%	9.6%	8.2%
Mining and Oil	.1%	.1%	.1%	.1%	.1%
Manufacturing	1.2%	1.7%	1.9%	2.0%	2.1%
Construction	12.2%	13.9%	11.6%	10.7%	9.9%
Retail Trade	14.4%	14.1%	14.5%	14.7%	14.8%
Wholesale Trade	2.0%	1.4%	1.9%	2.0%	2.2%
Services & Govt.	27.9%	47.0%	52.2%	54.4%	56.3%
Unemployed	5.4%	7.1%	6.7%	6.6%	6.4%

Table 1:17. Havre Trade Area Labor Forces by Sectors, 1950, 1960 and Projections to 1980

Sector	1950	1960	1970	1975	1980
Agriculture	4,599	3,710	3,166	2,894	2,622
Mining and Oil	67	13	13	13	13
Manufacturing	291	346	365	375	384
Construction	557	733	818	860	903
Retail Trade	1,727	1,812	1,855	1,877	1,898
Wholesale Trade	314	295	304	308	313
Services & Govt.	3,969	4,915	5,530	5,837	6,145
Unemployed	532	735	812	851	889
Total	12,056	12,559	12,863	13,015	13,167
			Percentage Distribution		
Agriculture	38.1%	29.5%	24.6%	22.2%	19.9%
Mining and Oil	.6%	.1%	.1%	.1%	.1%
Manufacturing	2.4%	2.8%	2.8%	2.9%	2.9%
Construction	4.6%	5.8%	6.4%	6.6%	6.9%
Retail Trade	14.3%	14.4%	14.4%	14.4%	14.4%
Wholesale Trade	2.6%	2.3%	2.4%	2.4%	2.4%
Services & Govt.	32.9%	39.1%	43.0%	44.8%	46.7%
Unemployed	4.4%	5.9%	6.3%	6.5%	6.8%

Table 1:18. Wolf Point Trade Area Labor Forces by Sectors, 1950, 1960 and Projections to 1980

Sector	1950	1960	1970	1975	1980
Agriculture	3,566	2,316	1,916	1,683	1,456
Mining and Oil	42	35	35	35	35
Manufacturing	118	209	231	239	247
Construction	320	405	464	488	512
Retail Trade	1,009	1,137	1,182	1,191	1,199
Wholesale Trade	163	227	240	243	247
Services & Govt.	1,896	2,450	2,877	3,062	3,241
Unemployed	344	495	515	518	522
Total	7,458	7,274	7,460	7,459	7,459
		Percentage Distribution			
Agriculture	47.8%	31.8%	25.7%	22.6%	19.5%
Mining and Oil	.6%	.5%	.5%	.5%	.5%
Manufacturing	1.6%	2.9%	3.1%	3.2%	3.3%
Construction	4.3%	5.6%	6.2%	6.5%	6.9%
Retail Trade	13.5%	15.6%	15.8%	16.0%	16.1%
Wholesale Trade	2.2%	3.1%	3.2%	3.3%	3.3%
Services & Govt.	25.4%	33.7%	38.6%	41.1%	43.5%
Unemployed	4.6%	6.8%	6.9%	6.9%	7.0%

Table 1:19. Sidney Trade Area Labor Forces by Sectors, 1950, 1960 and Projections to 1980

Sector	1950	1960	1970	1975	1980
Agriculture	1,467	986	841	769	696
Mining and Oil	7	19	19	18	18
Manufacturing	149	245	291	314	337
Construction	301	184	215	231	246
Retail Trade	495	659	692	709	725
Wholesale Trade	83	139	145	148	151
Services & Govt.	961	1,040	1,263	1,375	1,486
Unemployed	232	281	302	313	323
Total	3,695	3,553	3,768	3,877	3,982
		Percentage Distribution			
Agriculture	39.7%	27.8%	22.3%	19.8%	17.5%
Mining and Oil	.2%	.5%	.5%	.5%	.5%
Manufacturing	4.0%	6.9%	7.7%	8.1%	8.5%
Construction	8.1%	5.2%	5.7%	6.0%	6.2%
Retail Trade	13.4%	18.5%	18.4%	18.3%	18.2%
Wholesale Trade	2.2%	3.9%	3.8%	3.8%	3.8%
Services & Govt.	26.0%	29.3%	33.5%	35.5%	37.3%
Unemployed	6.3%	7.9%	8.0%	8.1%	8.1%

Table 1:20. Glendive Trade Area Labor Forces by Sectors, 1950, 1960 and Projections to 1980

Sector	1950	1960	1970	1975	1980
Agriculture	2,347	1,668	1,423	1,301	1,178
Mining and Oil	29	235	229	226	223
Manufacturing	77	155	194	214	233
Construction	297	416	468	494	520
Retail Trade	696	928	965	983	1,002
Wholesale Trade	88	183	190	194	197
Services & Govt.	1,781	2,303	2,634	2,800	2,965
Unemployed	160	228	267	286	306
Total	5,475	6,116	6,370	6,498	6,624
		Percentage Distribution			
Agriculture	42.9%	27.3%	22.3%	20.0%	17.8%
Mining and Oil	.5%	3.8%	3.6%	3.5%	3.4%
Manufacturing	1.4%	2.5%	3.0%	3.3%	3.5%
Construction	5.4%	6.8%	7.3%	7.6%	7.9%
Retail Trade	12.7%	15.2%	15.1%	15.1%	15.1%
Wholesale Trade	1.6%	3.0%	3.0%	3.0%	3.0%
Services & Govt.	32.5%	37.7%	41.4%	43.1%	44.8%
Unemployed	2.9%	3.7%	4.2%	4.4%	4.6%

Table 1:21. Miles City Trade Area Labor Forces by Sectors, 1950, 1960 and Projections to 1980

Sector	1950	1960	1970	1975	1980
Agriculture	4,927	3,741	3,192	2,917	2,643
Mining and Oil	184	205	200	197	195
Manufacturing	243	287	309	320	331
Construction	817	662	737	775	812
Retail Trade	1,766	1,840	1,874	1,891	1,908
Wholesale Trade	200	249	258	263	267
Services & Govt.	4,069	4,463	5,036	5,323	5,609
Unemployed	661	589	664	701	739
Total	12,867	12,036	12,270	12,387	12,504
		Percentage Distribution			
Agriculture	38.3%	31.1%	26.0%	23.5%	21.1%
Mining and Oil	1.4%	1.7%	1.6%	1.6%	1.6%
Manufacturing	1.9%	2.4%	2.5%	2.6%	2.6%
Construction	6.3%	5.5%	6.0%	6.3%	6.5%
Retail Trade	13.7%	15.3%	15.3%	15.3%	15.3%
Wholesale Trade	1.6%	2.1%	2.1%	2.1%	2.1%
Services & Govt.	31.6%	37.1%	41.0%	43.0%	44.9%
Unemployed	5.1%	4.9%	5.4%	5.7%	5.9%

HOUSEHOLD INCOMES 1964 BY COUNTY BY TRADE AREA

Table 1:22 shows the percentage of households in each income category by trade area for the year 1964. The counties are ranked within each trade area in accordance with their 1960 population, the first county listed being the largest. This table is designed so that counties that are only partially within a trade area are identified. The source of this data is material published for 1964 by the North Star Research and Development Institute and the Upper Midwest Research and Development Council of Minnesota.

The income categories shown are: zero to $3,999, $4,000 to $6,999, and $7,000 and over. There is an implied relationship between the number of households in these income categories and their use of air service. It is quite clear that as the percentage of households with incomes over $7,000 rises, the use of air service in that trade area will also increase. It is equally apparent that as the number of households with under $4,000 total income increases, the expected use of and demands for air service will tend to go down.

This income data is in no way considered to be a perfect indicator of air service requirments or air service usage, but it is a good general indicator important to the economic profile of these trade areas. It is also definitely related to the future use of and demands for air service which can be expected within these various trade areas.

It is apparent from Table 1:22 that Montana's counties exhibit great heterogeneity with respect to the number of households within various income categories. These same differences exist, at least in part, among the several trade areas. In addition, the income range within counties and trade areas is great. Lewis and Clark and Hill Counties show well over forty percent of their total households with over $7,000 income, and less than thirty percent under $4,000. This can be contrasted directly to such counties as Wibaux and Garfield where over sixty percent of the households have incomes less than $4,000. These kinds of differences unquestionably influence relative demands for air service.

Labor forces and the percentage of households in various income categories are related by trade areas, or groups of trade areas, to point out the general conditions of the trade area relative to income distribution and projected labor

Table 1:22. Percentage of Households in Income Categories by Trade Area by County, 1964*

County	$0 to $3,999	$4,000 to $6,999	$7,000 and Over
KALISPELL TRADE AREA			
Flathead	38.9%	33.4%	27.7%
Lincoln	36.0%	36.5%	27.5%
Lake**	55.8%	27.5%	16.7%
MISSOULA TRADE AREA			
Missoula	33.5%	33.1%	33.4%
Ravalli	59.3%	24.4%	16.3%
Powell**	37.7%	35.2%	27.1%
Sanders	43.8%	32.3%	23.9%
Mineral	32.6%	38.9%	23.5%
Granite	44.2%	35.1%	20.7%
Lake**	55.8%	27.5%	16.7%
ANACONDA TRADE AREA			
Deer Lodge	42.0%	34.8%	23.2%
Powell**	37.7%	35.2%	27.1%
BUTTE TRADE AREA			
Silver Bow	40.1%	33.1%	26.8%
Beaverhead	43.9%	27.9%	28.2%
Madison	50.9%	27.8%	21.3%
Jefferson**	44.8%	25.7%	29.5%

Table 1:22. (cont.)

County	$0 to $3,999	$4,000 to $6,999	$7,000 and Over
	HELENA TRADE AREA		
Lewis & Clark	27.7%	30.6%	41.7%
Broadwater	58.1%	25.6%	16.3%
Jefferson**	44.8%	25.7%	29.5%
Powell**	37.7%	35.2%	27.1%
	GREAT FALLS TRADE AREA		
Cascade	31.0%	33.2%	35.8%
Glacier	43.4%	28.6%	28.0%
Toole	28.5%	33.6%	37.9%
Pondera	42.6%	27.2%	30.2%
Teton	41.4%	27.2%	31.4%
Judith Basin	39.7%	29.3%	31.0%
Liberty	33.6%	24.5%	41.9%
Meagher	44.4%	31.3%	24.3%
Chouteau**	36.7%	27.8%	35.5%
	HAVRE TRADE AREA		
Hill	29.7%	30.2%	40.1%
Blaine	52.0%	25.3%	22.7%
Phillips	52.7%	26.8%	20.5%
Chouteau**	36.7%	27.8%	35.5%
	LEWISTOWN TRADE AREA		
Fergus	43.8%	29.7%	26.5%
Petroleum	35.1%	34.0%	30.9%

Table 1:22. (cont.)

County	$0 to $3,999	$4,000 to $6,999	$7,000 and Over
	BOZEMAN TRADE AREA		
Gallatin	39.5%	31.2%	29.3%
	LIVINGSTON TRADE AREA		
Park	40.6%	34.0%	25.4%
Sweet Grass	51.6%	26.7%	21.7%
	GLASGOW TRADE AREA		
Valley	40.6%	29.3%	30.1%
	BILLINGS TRADE AREA		
Yellowstone	29.1%	32.8%	38.1%
Big Horn	52.2%	25.8%	22.0%
Carbon	53.1%	28.4%	18.5%
Stillwater	46.4%	30.8%	22.8%
Musselshell	45.9%	31.4%	22.7%
Wheatland	39.0%	29.7%	31.3%
Treasure	50.6%	29.4%	20.0%
Golden Valley	55.8%	26.8%	17.4%
	SIDNEY TRADE AREA		
Richland	51.0%	27.6%	21.4%

Table 1:22. (cont.)

County	$0 to $3,999	$4,000 to $6,999	$7,000 and Over
	GLENDIVE TRADE AREA		
Dawson	35.7%	33.7%	30.6%
McCone	57.0%	22.7%	20.3%
Wibaux	64.1%	24.3%	11.6%
	MILES CITY TRADE AREA		
Custer	41.7%	30.8%	27.5%
Rosebud	52.0%	24.4%	23.6%
Fallon	48.1%	30.9%	21.0%
Carter	52.6%	24.7%	22.7%
Powder River	46.9%	25.6%	27.5%
Prairie	50.5%	27.0%	22.5%
Garfield	62.3%	19.8%	17.9%
	WOLF POINT TRADE AREA		
Roosevelt	49.8%	26.5%	23.7%
Sheridan	50.1%	30.3%	19.6%
Daniels	50.9%	30.6%	18.5%

*Source: North Star Research and Development Institute in connection with Upper Midwest Research and Development Council, University of Minnesota, Minneapolis, Minnesota.

**County is split in two or more trade areas.

force. Projected labor force changes will likely have significant effects upon projected income distributions.

No projections are made of income and income distribution by trade areas, but trade area labor force projections yield important indications of the changing and shifting that can be anticipated within income categories, and of the total income of the trade area for the future time periods of 1970, 1975, and 1980 as compared to 1950 and 1960. The major items used as a basis for this discussion are the changes in percentage distribution of labor by sector relative to the earnings that can be anticipated within these sectors.

Table 1:23 contains estimates of income ranges which can be expected by sector as projected to 1975 by the Upper Midwest Economic Study. Some points of real caution must be emphasized relative to this material. These projected income ranges are only meant to be rough approximations of average income which can be expected in each sector. The reason for this statement is that these estimates are derived from simple averages within employment categories which are in turn averaged among several categories to get an indication of income by sector.

One cannot and should not apply these projected incomes to the projected employment to obtain income by trade area. Such a calculation would not even yield approximate incomes.

The data is meant to be used only as a general indicator of the possible differences between incomes in the various sectors. By combining this data with the projected employment by sector, one can estimate the effect of shifting employment between sectors on the total income of the trade area. In other words, an examination of the shifts in employment as indicated by percentage employed in each sector combined with the projected income figures gives some indication of possible directional changes in total income of the trade area. For example, as the percentage of total employment goes up in a sector such as services and government, while at the same time it decreases in retail trade, one would expect total income to increase.

Table 1:23. Personal Income Per Employee by Sector Projected to 1975*

Sector	Income
Manufacturing	$12,500 - $13,500
Mining & Oil	$10,500 - $11,500
Wholesale	$9,700 - $10,700
Service & Government	$9,500 - $10,500
Construction	$8,700 - $9,700
Agriculture**	$8,000 - $9,000
Retail	$5,000 - $6,000

*Data compiled from: *op.cit.*, Henderson, J. M., and Krueger, A. O.; p. 170.

**Agricultural income reported as net cash income per farm.

GENERAL TRENDS IN LABOR FORCE PROJECTIONS

In examining trade area labor forces by sector for the years 1950 to 1960 and on into the future for 1970, 1975, and 1980, some clearly identifiable trends are evident and need to be examined in detail.

The first of these major trends is a general increase in employment in nearly all trade area labor forces in the services and government sector. In contrast, a general decline in labor force is projected in all trade areas for the agricultural sector.

The decrease in agricultural employment is an historic trend of the agricultural production industry of the United States, and especially Montana. This well established trend suggests that the size of farms will continue to increase

at a rate much the same as in the past, with a corresponding decrease in the number of farms, due primarily to the changing input and output structures of all American agriculture.

There are four general categories of agricultural inputs: land, labor, capital, and management. Over time, technological innovation has forced a very significant change in the combination of these four inputs to produce a given output. As technology advanced and the amount of land remained approximately the same, changes resulted in the increased employment of the other three input factors: capital, management, and labor. The employment of capital and management has increased at a very high rate while at the same time there has been a decrease in the use of labor. Capital and management have been substituted for labor, resulting in the present structure of the agricultural economy. Throughout the projection period to 1980, one should expect increases in the size of farms, decreases in the number of farms, and a continued substitution of capital and management for labor. It is apparent from the trade area labor force and agriculture employment projections that continual sharp declines are expected. There appears to be no possibility of a reversal in this trend between now and 1980.

The above discussion concerning projected decreases of employment opportunities in the agricultural sector does not in any way suggest that total agricultural output or agricultural income will decline. Quite the opposite is likely to be the case. It should also be stressed that, as the labor input declines through the substitution of technology in the form of capital and management, there is a corresponding increase in the demand for services related to the agricultural sector of the economy. Examples are the increasing demands for such factors of production as fertilizers, chemicals, pesticides, farm machinery, and others. It is thus clear, that the increases projected for the category of services and government, are directly affected by this agricultural adjustment.

The services sector will now be examined to isolate the causes of expanding employment opportunities other than those explained above. It is interesting to note that in the time period 1950 to 1960 there was an annual average increase of 1.35 percent for all employment in service industries, while there was a correspondingly smaller, 1.15 percent, annual increase for all other non-agricultural employment in the Upper Midwest economy.

The rate of growth of employment in the services sector for the United States from 1960 to 1975, as projected by the National Planning Association, is 2.65 percent per year

compared with only 2.03 percent average annual growth for the period 1950 to 1960. It is evident that the demands for services are going to increase proportionately more over the next ten to fifteen years than they have during the last ten to fifteen years. This is true even in light of the fact that in the last ten to fifteen years the increased demands for employment in services have exceeded the rate of increases of demand for other non-agricultural employment.

Much of this anticipated demand revolves around the fact that, as individual incomes increase and as the typical consumer has more income to spend, the proportionate increase in demands for services is much greater than for other commodities. One's demands for services increase at a higher rate than does total income, while the demands for other commodities, such as food, increase at a smaller rate relative to increases in total income. In economic terms, this simply means that the income elasticity of demand for services is considerably higher than the income elasticity of demand for many other consumer goods.

Likewise, it is logical to assume that we are going to continue to see increases in employment within the government sector. As we have increases in state and local government activity, government employment will increase. A high percentage of local and state government revenues are spent directly on employment.

As a society, we are consuming more and more of our total product socially, and we are demanding that more and more services be supplied by or through the government sector. There are many examples of this, such as increased improvements in roads, airports, police and fire protection, education, national defense, space exploration, and numerous others.

An example of this increase in employment by the services and government sector is found in the trade areas where higher education units of the University System are located. In Montana as in the entire nation, we are sending a higher and higher proportion of our total youth to college and high school while at the same time, a higher proportion of the students are completing college and going on for advance degrees. Education is singled out here only as an example, but it is clear that in the trade areas where units of the University System are located, some of the increases in the employment projected for the services and government sector are due to increased activities centered around the units of the University System. This is particularly true in the areas of Bozeman and Missoula where these factors are of substantial importance to the total trade area labor force. As we expand our demands upon state government for increased

services, our state government will become a larger and larger employer of people, having particular effect on Helena's labor force.

Throughout the entire economy, we find that a larger proportion of our total output in any given year is being consumed in the social sector in what are commonly viewed as public goods. This is not to say that new demands for private goods are not being generated. The point is that as a society we are consuming additional units of gross output in the form of both public and private goods, with a higher percentage increase, in most cases, in the use of public goods rather than private goods. One cannot continue to increase consumption in the private sector without corresponding increases, often at an increasing rate, in the government or public sector. A simple example is that one cannot continue to increase consumption of motor vehicles or airplanes while at the same time not spending additional sums in the public sector for the construction of facilities such as roads and airports.

In conclusion, state and local governments are going to provide more and more services, and a portion of the increase shown in the services and government sector is attributable to increased demands by society upon government to supply increased services. It should also be mentioned that the trade area labor force projections for Glasgow and Great Falls reflect a significant amount of employment in the military sector of the federal government. There is also some of this military influence in the Lewistown trade area projection because of continued increase in missile activity. The Glasgow Air Force Base has been closed and military spending has been, or will be, seriously reduced in terms of employment within the next five to ten years as compared to what it was in the past. It is assumed in these projections that some other activity will replace the air base as an employer of people. These people do, however, show up in the services and government sector in accordance with the projection. It is quite logical to assume that the increased employment which will be generated as a result of an alternative use of the air base facility could well be in the services and government sector.

BILLINGS TRADE AREA

(Counties of Yellowstone, Big Horn, Carbon, Stillwater, Musselshell, Wheatland, Treasure, and Golden Valley)

The city of Billings dominates the Billings trade area. Billings is one of only two primary wholesale/retail centers in Montana, and it is projected to retain this status for the period to 1980. It is a service hub for most of Montana and particularly the regions to the North, East, and South of it. The Billings metropolitan trade area is projected to become the largest urban population concentration in Montana.

An examination of the projected labor forces in the area suggests a high degree of economic stability for this trade area. No one or two sectors will dominate the future of the Billings trade area. With the exception of agriculture, mining and oil, all sectors indicate increased or stable labor requirements when measured as a percentage of the total labor force.

By 1980, the retail trade sector is projected to require the second largest labor force in the area, after services and government. Approximately seventeen percent of the total labor force in the Billings trade area will be engaged in retail trade. Together with the wholesale sector, these two sectors will employ approximately twenty-two percent of the total labor force of the area in 1980. The other sectors - construction, manufacturing, and agriculture - are all projected to employ between 6.9 and 9.8 percent of the total labor force in 1980. All this points to a high degree of balance which does not exist in most other trade areas of Montana.

The trade area income, as measured against the number of people employed in the various sectors, now and in the future, reflects a high degree of income stability. In 1950, 23 percent of the labor force was employed in agriculture, 33.6 percent in services and government, and 7 percent in construction. The projected distribution of the labor force for 1980 indicates that services and government will continue to employ the major proportion of the labor force, while manufacturing will increase from 6.6 percent in 1950, to 9.8 percent of the labor force in 1980. Agriculture will employ a decreasing percentage of the labor force, but this

in no way means that the income derived from agriculture will decrease. On the contrary, the net cash income per farm is projected to increase from 1950 through 1980.

Again one must remember that Billings and Yellowstone County tend to dominate the Billings trade area. Consequently, the favorable outlook for the Billings trade center may not be totally reflected in the surrounding counties. For example, in 1964, 38.1 percent of the families in Yellowstone County had incomes in excess of $7,000, and only 29.1 percent had incomes below $4,000. This favorable income pattern does not exist in any other county within the Billings trade area. At the other end of the spectrum, Golden Valley County had only 17.4 percent of its families with incomes in excess of $7,000, while 55.8 percent had incomes below $4,000. Carbon and Big Horn Counties were in a similar income situation, having over fifty percent of their families with incomes of less than $4,000.

In summary, the Billings trade area will continue to grow with the city of Billings as its dominant trade center. The people living within this trade area will continue to demand increased services, both public and private. The growth of Eastern Montana College will be an important factor contributing to the demand for and supply of these services.

GREAT FALLS TRADE AREA

(Counties of Cascade, Glacier, Toole, Pondera, Teton, Judith Basin, Liberty, Meagher, and Chouteau)

Great Falls is the second largest metropolitan area in the state of Montana and is one of the two primary wholesale/retail trade centers in Montana. Although the trade area includes the cities of Cut Bank, Shelby, and Conrad which provide services for that part of the region, Great Falls functions, in all respects, as the principal service center for the trade area. Penetrations beyond the boundaries of the trade area do occur and are to be expected.

The wholesale and retail functions of Great Falls have significant importance to all of Northern and Central Montana. The Great Falls area serves as an important center of activity for vast areas of the Western Montana mountain economy as well as serving the plains area.

A review of the projected employment by sectors in the trade area indicates a healthy, growth economy for the Great Falls trade area. A comparison of economic activity in 1950 with the projections for 1980 suggests that Great Falls will retain its prominence as a wholesale/retail trade center.

The proportion of the labor force employed in services and government will increase significantly from 36.3 percent in 1950, to 51.9 percent in 1980. The increase in the services and government sector will be generated primarily through increased activity surrounding the large air base at Great Falls. Since approximately ten percent of the projected labor force for 1980 will be employed in military related fields, an element of uncertainty exists regarding the future of the Great Falls trade area. Militarily associated employment opportunities are generally not a direct function of economic forces but rather of political forces. This degree of uncertainty notwithstanding, the Great Falls trade area must be regarded as one with real stability now and in the future. Changes which might occur relative to the military installations could increase or decrease employment. The likelihood of either eventuality is difficult to predict. Additional large increases could serve to greatly accelerate the Great Falls economy, making these labor force projections unrealistically low.

Agricultural employment is projected to decline, but a highly productive agricultural economy will require increased agricultural-related services in the area. Presently, Great Falls is a principal grain distribution point for much of the grain produced in Montana and serves as an effective grain market for the region. The College of Great Falls is also an important growth factor, having influence on employment projections for the services and government sector.

An examination of family income distribution for the trade area reveals a comparable situation among the several counties. Not only did Cascade County report 35.8 percent of its families with incomes in excess of $7,000 in 1964, but six of the remaining eight counties reported that over thirty percent of their families had incomes in excess of $7,000. This favorable income distribution is a reflection of the prosperous agricultural economy surrounding Great Falls coupled with a truly healthy economic climate and income situation within the Great Falls metropolitan area.

TRADE AREAS OF MISSOULA AND KALISPELL

(Counties of Flathead, Lincoln, Lake, Missoula, Ravalli, Powell, Sanders, Mineral, and Granite)

Missoula and Kalispell serve as the two major service centers on the western edge of Montana. Missoula has the third largest concentration of urban population in Montana while Kalispell is projected to be sixth in terms of urban area population by 1975. The combined trade areas had a 1960 population of 150,000, half of which was in Missoula and Flathead Counties. It is also important to note that Missoula is one of two secondary wholesale centers in Montana, while Kalispell is classified as a complete shopping center.

The trade area population and labor force projections by sector for the Missoula and Kalispell trade areas are influenced by several other small cities or concentrations of urban population. These include such cities as Hamilton, Polson, Ronan, Libby, Whitefish, and Columbia Falls. The entire economy of these two trade areas is characterized by their service functions coupled with manufacturing.

The manufacturing sector of the projected labor force for Missoula and Kalispell is significantly higher than for most other trade areas in Montana. The manufacturing component of the Missoula trade area labor force is projected to be approximately fourteen percent in 1980, while Kalispell's will be nearly twenty-one percent. The majority of this manufacturing activity centers around the lumbering and associated timber products industries.

This significant level of manufacturing coupled with the retail and wholesale trade, as well as services and government, give Missoula and Kalispell a relatively high degree of stability in their economic climate.

The services and government sector in both of these trade areas is high, due in part to the concentration of summer and winter recreational activities in the area. These activities center in the mountain area coupled with water-based recreation throughout the entire length of the valley, which runs from Hamilton to Glacier Park. Flathead Lake along with hundreds of small mountain lakes offer considerable outdoor recreation potential. Glacier Park is also located within an easy drive of Kalispell.

In addition to the recreational opportunities, retirement activities in the area are many, which tends to increase demands for labor in the services and government sector. The Missoula labor force projections are also significant in terms of State employment because of the University of Montana and its associated activities as a major unit of the Montana University System. Enthusiasm is widespread in Kalispell regarding the development of the community college and this could have significant impact in the future.

It should also be stressed that both Missoula and Kalispell are large agricultural service centers. In fact, they supply the majority of these services either directly or indirectly for all Montana agriculture west of the Continental Divide. Direct agricultural employment is projected to decline sharply, but employment in agricultural services will increase.

The income distribution of the people of Missoula and Kalispell is also quite favorable. One-third of Missoula's households and one-fourth of Kalispell's earned $7,000 or more income in 1964. Only two of the ten counties reported over fifty percent of their households with under $4,000 total income and they are the smaller counties of the region. It is likely that the area would tend to have more low income families due to the retirement aspect of the area economy.

BOZEMAN AND LIVINGSTON TRADE AREAS

(Counties of Gallatin, Park, and Sweet Grass)

The two trade areas taken together contain the cities of Bozeman and Livingston, which are classified as complete shopping centers. Both cities function as major service centers for the agriculture of the counties included in the two trade areas. While the Livingston trade area population is expected to increase by approximately twenty percent by 1980, Bozeman trade area population is projected to increase by fifty percent during the same time period.

The percentage of the labor force employed in the various sectors is undergoing substantial change. In 1950, 22.4 percent and 27.1 percent were employed in agriculture in the Bozeman and Livingston trade areas respectively. In 1980, it is projected that these same sectors will employ

only eight to eleven percent of the total labor force. In contrast, employment in services and government is projected to increase from 41.9 to 54.5 percent in the Bozeman area, and from 42.6 to 47.6 percent in the Livingston area. The development of the Bozeman trade area is directly related to the growth of Montana State University, a situation reflected by the projected growth in the services and government sector. Historically, Livingston has been an important railroad service center, but changes occurring in railroad employment are reflected in a projected reduced rate of growth in the services sector.

Service functions related to summer and winter recreational activities of the area are projected to make increasing demands on the available labor force. Both trade areas provide major entrances to Yellowstone National Park. Within and outside of the Park, summer and winter visitors are provided with diverse recreation opportunities. This form of activity is expected to become increasingly more important to the two trade areas and indeed generate employment in service industries.

The retail/wholesale trade sectors are projected to maintain their importance in the two trade areas, adjusting proportionately their demands for labor as the populations of the trade areas increase over time. However, increased numbers of people are expected to be employed in manufacturing in both the Livingston and Bozeman areas. Taken as one, these two trade areas do not offer any potentially dramatic departures from historic growth trends. However, stability and steady growth, especially for the Bozeman trade area, are most likely to continue.

The record of reported family income by counties in the two trade areas in 1964 indicates a rather even distribution, although Sweet Grass County reported over fifty percent of its families with incomes under $4,000. However, the absolute number of families is not large, in sparsely populated Sweet Grass County.

BUTTE AND ANACONDA TRADE AREAS

(Counties of Deer Lodge, Powell, Silver Bow, Beaverhead, Madison, and Jefferson)

These two trade areas have a large population base, heavily concentrated in the small geographic area which includes the cities of Butte and Anaconda. Butte historically has had excellent rail and highway facilities and consequently has emerged as one of the two secondary wholesale/retail trade centers in the state of Montana, third only to Billings and Great Falls.

The economic well-being of the Butte trade area is strongly and directly related to the conditions surrounding the copper industry. This particular area of Montana became a significant copper producer about 1880 and by 1887 was the nation's leading copper producer. However, copper production has gone through a technological revolution that has significantly increased labor productivity. Despite these productivity advances, Montana is among the nation's highest cost copper producing areas. The 1958 census of mineral industries shows a value added per employee in copper mining of $5,539 for Montana compared with the national average of $8,832. There is no evidence that the relatively high labor inputs for the Montana area are balanced by other cost advantages.

The future of copper production appears to govern the future of Butte, a future subject to considerable uncertainty. World copper reserves appear adequate for all foreseeable demands. The long run price of copper is likely to decline as better deposits and more efficient extra-active techniques are developed. Year-to-year copper price fluctuations both upward and downward are likely to continue. As the copper market moves through its gyrations so will the economy of the Butte trade area. Open pit mining and the mining of low grade underground deposits with block-caving methods have enabled Butte to maintain its level of copper output. But the future is somewhat clouded. There appears to be little that can be done to stimulate increased copper output over what is already being done. The relatively high unemployment level among those dependent on copper mining in the Butte trade area constitutes an important problem, and employment in copper mining is likely to decline. Therefore, employment demands by those being displaced because

of technological advances and foreign competition from newly developed mines in Africa and South America which contain higher grade ore, will either require new employment opportunities or result in continued out-migration or both.

Approximately twenty-four percent of the Butte trade area labor force was employed in mining in 1950. This proportion is projected to decline to approximately thirteen percent in 1980, clearly reflecting the changing copper scene in the Butte trade area. On the other hand, the percentage of labor force employed in the wholesale/retail trades and manufacturing is projected to remain constant through the period 1950 to 1980.

The relationship between the Anaconda trade area and the Butte trade area is very close. The changes in copper mining activity in Butte quickly affect the Anaconda trade area. Just as employment in mining is projected to decline in the Butte trade area between 1950 and 1980, so is employment in the copper and other metal processing activities in Anaconda. In 1950 approximately forty-nine percent of the Anaconda trade area labor was employed in manufacturing (primary metals processing). By 1980 only 31.5 percent of the trade area's labor force will be employed in manufacturing. The only sectors which appear to show increasing demands for labor are the sectors of services and government and retail trade.

The percentage of families with incomes in excess of $7,000 in 1964 was low. All six counties of the two trade areas reported fewer than thirty percent of the families with incomes of $7,000 or more. The greatest proportion of households reported income of under $4,000 per year.

HELENA TRADE AREA

(Counties of Lewis and Clark, Broadwater, Jefferson, and Powell)

The city of Helena, the fifth largest urban area in the State, dominates the trade area. Because the city is the State Capitol, State agencies and governmental activities, as reflected in service and government employment, bear heavily on the current and projected employment picture. The population of the area is highly concentrated in Lewis

and Clark County and projected population growth will largely be a result of Helena's growth.

By 1980, the services and government sector is projected to employ approximately 56 percent of the total labor force, an increase from 47.4 percent in 1950. The percentage employed in retail and wholesale trades is expected to remain constant, with the other sectors showing slight decreases.

Records of family income distribution in 1964 show that forty-two percent of the families in Lewis and Clark County had incomes of $7,000 or more - the highest proportion of any county in the State. Also, the county had the smallest proportion of families with incomes of less than $4,000. Broadwater County reported the least favorable family income distribution for the Helena trade area.

It has been adequately stressed earlier in this chapter that increased government activity is a near certainty. Helena's economy can do nothing but strengthen as the demand for State government services increases and the State takes constructive action to meet these needs. It is entirely possible that annual rather than bi-annual legislative sessions of longer duration will be instituted in the near future. In summary, State government and associated activities, including Carroll College, are projected to lend great strength and stability to this trade area over the projected time period.

THE TRADE AREAS CONTAINING THE SEVEN SMALL SERVICE CENTERS AND RURAL COMMUNITIES OF EASTERN MONTANA

(Counties of Valley, Fergus, Petroleum, Roosevelt, Sheridan, Daniels, Dawson, McCone, Wibaux, Richland, Hill, Blaine, Phillips, Chouteau, Custer, Rosebud, Fallon, Carter, Powder River, Prairie, and Garfield)

An examination of the state of Montana east of a line drawn between the two large wholesale/retail trade centers of Billings and Great Falls, reveals that there are seven small service centers which, in connection with these two larger points, serve most of the people of Eastern Montana. These include Lewistown, Glendive, Havre, Glasgow, Wolf Point, Sidney, and Miles City. These centers or trade areas contain twenty-one counties with approximately 135,000 residents

in 1960. These 135,000 people are distributed over more than half of the State's land area, making it the most sparsely settled part of the State.

These seven small service centers all serve rural populations. The total population of most of these trade areas is projected to remain approximately constant with only a few exceptions. These rural economies are subject to a high degree of economic variability resulting from the uncertainty of agricultural production. However, the possibility of new employment opportunities, particularly in the petroleum industries, may have significant effect.

All of these centers are important agriculture service centers and six of them have large percentages of agricultural employment. The projected agricultural employment by trade areas for 1980 is as follows:

Lewistown	22.4%
Miles City	21.1%
Havre	19.9%
Wolf Point	19.5%
Glendive	17.8%
Sidney	17.5%
Glasgow	8.2%

The agriculture service sectors of these economies are likely to expand due to increasing demands for purchased inputs coupled with a continual substitution of capital and management for labor.

Employment in the services and government sectors of all of these economies is relatively high. This is in large part due to the agriculture service industries as well as the fact that these centers serve as the focus for most local, state, and federal government functions in Eastern Montana. The services and government sector at Glasgow is significantly higher than in any of the others, primarily, because of the activity surrounding the Glasgow Air Force Base. Projections show increases in this services and government sector based on the assumption that something will replace or use the Glasgow Air Force Base facility which will be a comparable generator of employment opportunities. The services and government sectors of the Havre, Miles City, and Glendive trade areas are also directly affected by the college

activities in these communities. Miles City and Glendive both have junior colleges and Havre has Northern Montana College. There are several federal and state agricultural experiment stations throughout the area which generate government employment. In addition, Indian reservations are an important source of government employment particularly at Wolf Point. The 1980 projected employment in the services and government sectors are as follows:

Glasgow	56.3%
Havre	46.7%
Miles City	44.9%
Glendive	44.8%
Wolf Point	43.5%
Lewistown	41.5%
Sidney	37.3%

Manufacturing and construction are not major employers of people in the area. Construction employment ranges from 6.5 to 10 percent of total labor, and manufacturing is projected to be two to three percent in Glasgow, Miles City, and Havre in 1980 and three to four percent in Glendive, Lewistown, and Wolf Point. Sidney is a significant exception, with a projected manufacturing employment of 8.5 percent of the total labor force in 1980. This is in part the result of Sidney's classification as a single county trade area, and the impact of an industry such as sugar beet processing which quickly affects overall employment statistics.

The mining and oil activity in Eastern Montana is relatively small except in the trade areas of Miles City and Glendive. The projected labor force in these two trade areas is subject to considerable change as increased activities continue in the oil fields.

The area is characterized by a large number of people living in households with under $4,000 total income. Eleven of the counties reported over fifty percent of their households with under $4,000 income. Another six counties reported forty to fifty percent of their families with under $4,000 total income. Only three counties reported less than forty percent of their households with incomes under $4,000. Only those counties which are completely contained in the trade areas are involved in the above analysis. The top county in the area in terms of favorable income distribution is

Hill County. It reported the lowest number of families with under $4,000 total income and the highest number of families with over $7,000 total income (40.1 percent). This is one of the highest levels in the State.

The following is a summary of the percentage of families in 1964 reporting income above $7,000 by county. One county is shown for each trade area. It is, in every instance, the largest county of the trade area and the one in which the small service center is located.

County	Percentage	City
Hill	40.1	Havre
Dawson	30.6	Glendive
Valley	30.1	Glasgow
Custer	27.5	Miles City
Fergus	26.5	Lewistown
Roosevelt	23.7	Wolf Point
Richland	21.4	Sidney

CONCLUSION

Projections are based on assumptions. If the assumptions are satisfied, the projections will be realized. However, assumptions are subject to many sources of error. They are based on past trends and future events foreseeable at the time the assumptions were formulated. Some future events can be anticipated, while others cannot. All the projections made in this study are intended to reflect the broad forces that will influence the well-being of Montana's communities relative to air service. No attempt has been made to incorporate changes in policy. In spite of this, the projections are useful, for if they suggest a particular future development, programs may be designed for the avoidance, alteration or acceleration of a predicted development.

CHAPTER 2

THE PAST AND PRESENT AIR SERVICE IN MONTANA AND RELATED MATTERS

Separate from this report are two statistical supplements which describe in detail air traffic activity in Montana since 1959. These supplements present passenger origin and destination statistics as reported in the Civil Aeronautics Board publication, *Domestic Origin-Destination Survey of Airline Passenger Traffic*. This publication reports the results of a ten percent continuous sample of: (1) all airline tickets sold (less complete refunds) by the certified trunk and local service airlines for domestic travel on scheduled services in the continental United States, and (2) all tickets lifted by these carriers for domestic travel which were originally issued by airlines not reporting traffic to the Civil Aeronautics Board domestic traffic survey.

The sample procedure reported in this survey was put into operation on January 1, 1959. Prior to that time, no reliable source of data was available. For this reason, the statistical supplements to this report go back only to that date. Yearly data is reported for the years 1959 through 1966 inclusive. Quarterly data is reported for the last two quarters of 1963 and all four quarters of 1964, 1965, and 1966. For a detailed description of the procedure used in reporting these statistics, reference should be made to the introduction to each of the two supplements.

The purpose of this chapter is primarily to tie in the historical analysis of air traffic activity, as reported in the supplements, with the remainder of the report. The goal is to determine the historical traffic patterns within Montana and between Montana cities and the rest of the Nation. Total as well as seasonal demands for air service in the State will be analyzed as well as the traveler preference for east/west vs. north/south travel. Major air markets are identified and reported by city and state. Major air hubs used as rotating (connecting) points for passengers both inbound and outbound from Montana air markets are also identified and listed in order of importance.

In addition to an analysis of Montana's interstate air traffic activity, there is also intrastate analysis of air activity. A detailed summary of interest and demand for service between the various Montana air markets is presented. Reference is frequently made to the statistical supplements for supporting data.

A final and important part of this chapter is an analysis of the fare structure facing prospective air passengers in the State. This combined with a discussion of the competitive modes of transportation in the State in an effort to assess the present and future role of air service in meeting the transportation needs of Montana's communities.

Historic Origin and Destination Traffic

In 1959, total origin and destination traffic for Montana stood at 221,000 passengers. This dropped slightly in the next two years to a low of 208,000 in 1961, before starting an impressive climb. In 1961, however, the market was faced by a severe air strike lasting for nearly three months.[3] This strike obviously impaired any natural growth in the market and the recorded data for that year is biased downward. For this reason, most of the analysis excludes careful consideration of the 1959, 1960, and 1961 data points in analyzing the dynamic changes in the industry. The years 1962 through 1967 inclusive are most often referred to.

In 1962, total origin and destination traffic in Montana was recorded at just over 229,000. By 1966 this number had reached 439,000. This represented nearly a doubling of total traffic in only four years. The following year total traffic was estimated at 544,000 passengers. It must be noted that this 1967 total was estimated since at the time of publication of this report, data for the fourth quarter of 1967 was not yet available. Also estimated for later analysis was the third quarter of 1966, during which another severe air strike halted the industry - this time during the peak of the summer season.[4] The estimate for this quarter raised the 1966 traffic to a total of 475,000. A detailed description of the estimation procedure employed in these two cases is presented in Chapter 3 where the question of air traffic projections is analyzed.

This five year increase of 315,000 passengers represented an average annual increase of 19.0 percent. In no year did traffic increase by less than 13.9 percent. During the five year period, 1962-1966, air traffic in the State made a spectacular surge upward. That this is a long term trend is apparent when the question of traffic projections is considered in Chapter 3. To compare these increases in traffic, reference should be made to Table 19 on page 27

---

[3]The 1961 strike lasted from January 9 to April 1.

[4]The 1966 strike lasted from July 8 to August 22.

of Statistical Supplement No. 1. These totals and rates of growth are reproduced graphically in Figure 2:1.

To analyze this total traffic more carefully, it is important to examine the patterns of seasonal similarity and growth. Supplement Table 19 also presents this data which is graphed in Figure 2:2. Traffic during the third quarter of every year is always the peak level. This is preceded by two lower quarters with the first quarter always being the lowest. In the autumn of each year, traffic drops off from the summer high, thus completing an entire and well-defined cycle. Traffic during the spring and fall quarters of each year is always nearly the same. This similarity is clearly shown in Figure 2:2.

Also indicated in this figure is the steady year-to-year seasonal growth in traffic. Traffic in the third quarter of each year shows an average annual increase of twenty percent while traffic in the first, second, and fourth quarters shows average annual increases of eighteen, sixteen, and seventeen percent respectively. Thus, summer quarter traffic, in addition to being the largest, is also the fastest growing.

This yearly and quarterly picture, with few exceptions, is typical of each of the six major markets in Montana: Billings, Great Falls, Missoula, Butte, Helena, and Bozeman. Billings and Great Falls together have made up as much as seventy percent of the total State traffic at one time or another during this period. Counting all international traffic to Great Falls, these two markets are nearly equal. In 1967, the two together represented sixty-four percent of the total State traffic. This left Missoula with 10.8 percent, Butte with 9.7 percent, Helena with 5.3 percent, Bozeman with 3.1 percent, and the other eight Montana cities with 7.1 percent. The cities of Billings and Great Falls are the air traffic hubs for Montana.

A complete picture of the historic total origin and destination traffic for all Montana cities by year and by quarter can be found in Chapter 1, Tables 1-19, of Statistical Supplement No. 1. Details concerning historical yearly growths similar to those presented here for the entire State are discussed in Chapters 3 and 4 of this report for each Montana city.

Figure 2:1. State of Montana, Total Yearly Origin and Destination Traffic.

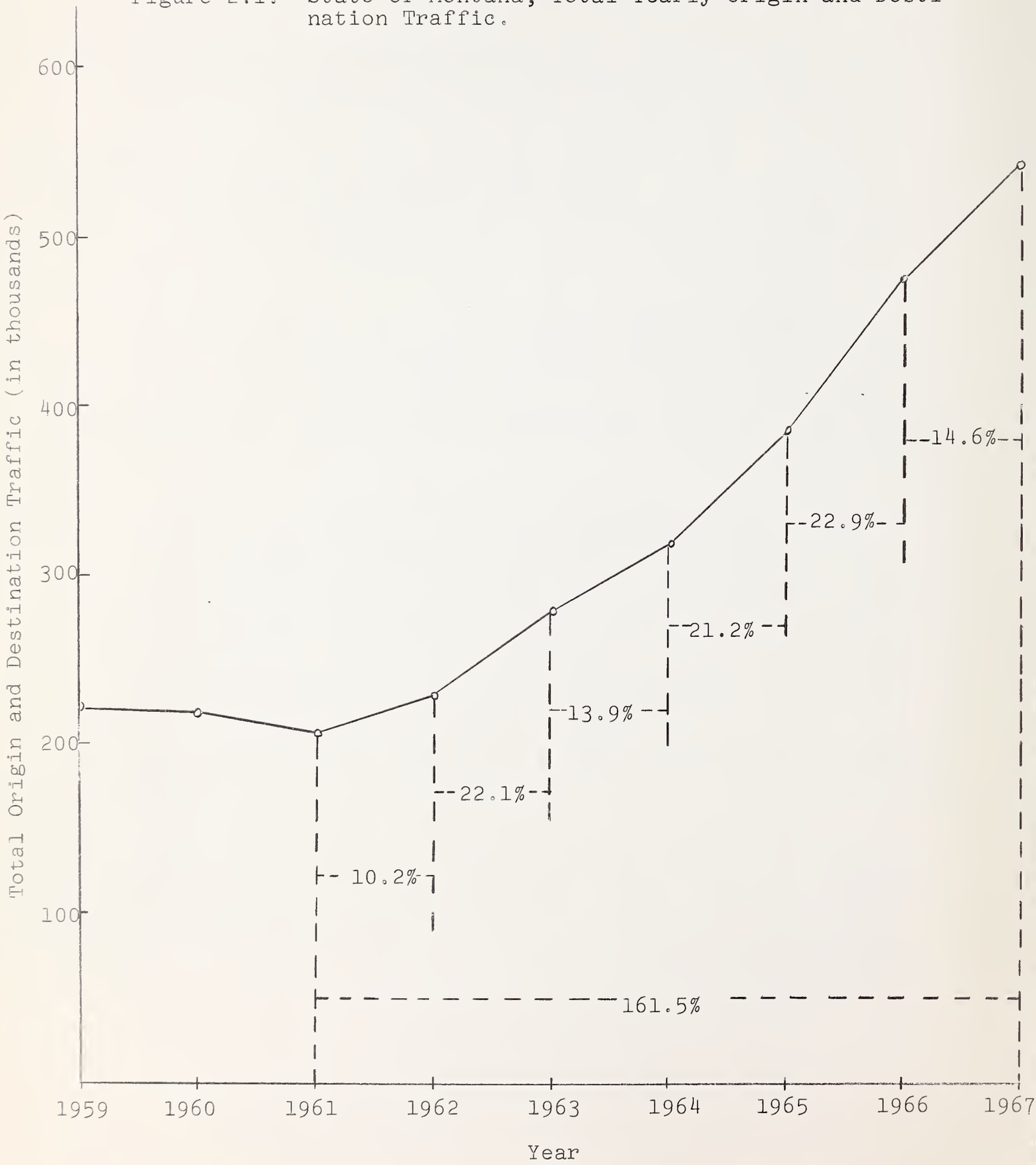
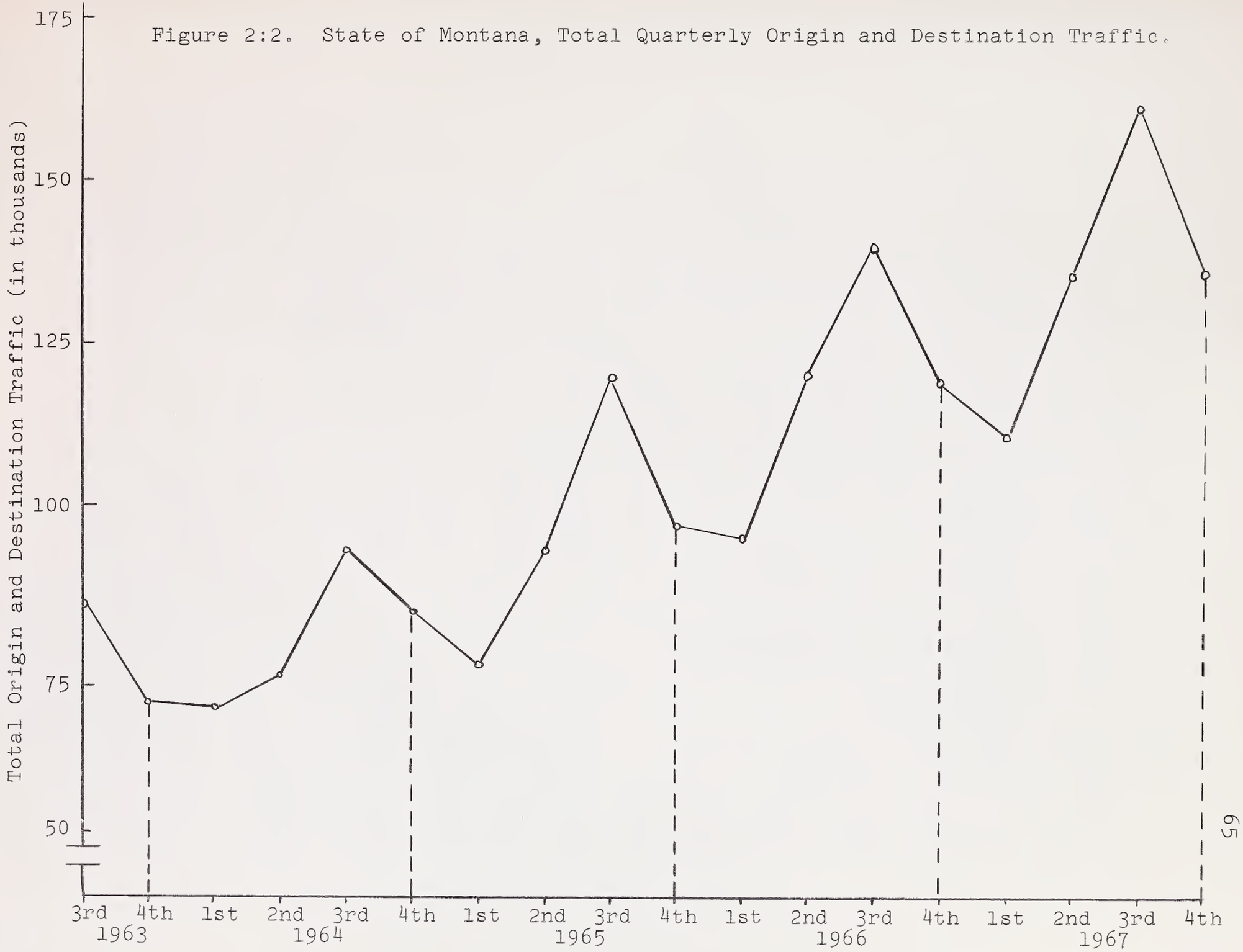


Figure 2:2. State of Montana, Total Quarterly Origin and Destination Traffic.



REGIONAL ORIGINATION AND DESTINATION TRAFFIC ANALYSIS

To further analyze the Civil Aeronautics Board origin and destination statistics, the United States is divided into ten regions. These regions are shown on the map on the following page. The states included in each region are as follows:

Region 1	Region 2	Region 3	Region 4
Arkansas	Iowa	Kentucky	Alabama
Colorado	Minnesota	Illinois	Florida
Kansas	North Dakota	Indiana	Georgia
Louisiana	South Dakota	Michigan	Mississippi
Missouri	Wisconsin	Ohio	North Carolina
Nebraska			South Carolina
New Mexico			
Oklahoma			
Texas			

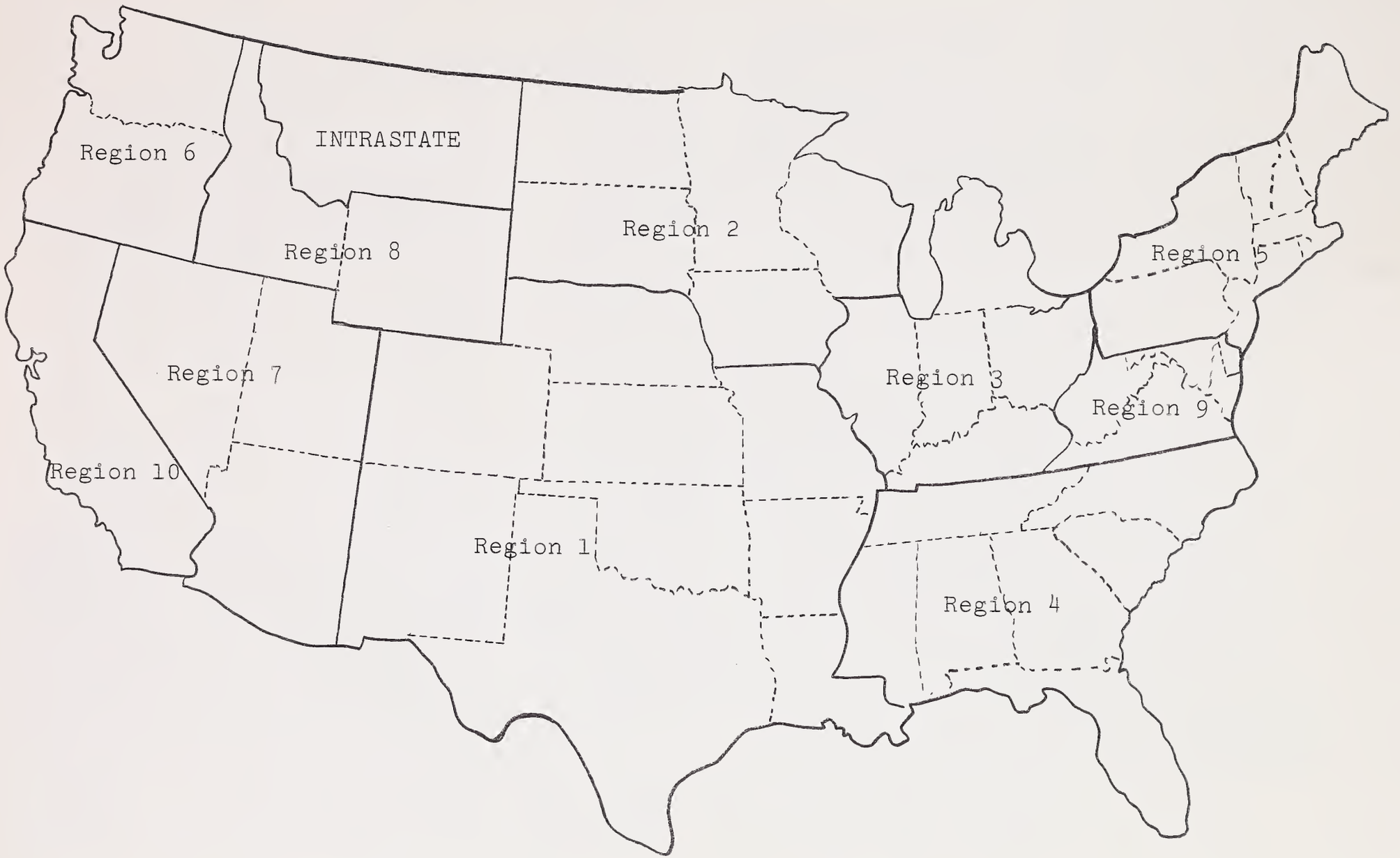
Region 5	Region 6	Region 8
Connecticut	Oregon	Idaho
Maine	Washington	Wyoming
Massachusetts		
New Hampshire		
New Jersey	Region 7	Region 9
New York		
Pennsylvania	Arizona	Delaware
Rhode Island	Nevada	Maryland
Vermont	Utah	Virginia
		Washington, D. C.
		West Virginia

Region 10

California

These regions are grouped into east/west and north/south sectors. Regions 2, 3, 5, 6, and 9 are considered part of east/west traffic. These include the major eastern and western markets in the states of Minnesota, Illinois, New York, Washington, and the District of Columbia.

Regional Map of the United States



Regions 1, 7, 8, and 10 are considered part of north/south traffic. This includes the major states of Colorado, Utah, Wyoming, and California. It is assumed that half of the traffic from Montana to Region 4 is routed through Chicago on an east/west pattern and half is routed through Salt Lake City - Denver on a north/south pattern.

By splitting the country into these regions, one can better understand the historical travel patterns of Montanans from various communities. Statistical Supplement No. 2 contains detailed descriptions of the regional traffic patterns for each city in Montana with air service. Total traffic between individual states and every Montana city is recorded for the years 1959 through 1966. Yearly data for 1959 through 1966, as well as quarterly data dating back to the third quarter of 1963, are presented in the Supplement. Abstracted from this are Chapters 2 and 3 of Supplement No. 1 which summarize the regional origin and destination statistics for each Montana city by year and by quarter, respectively. Chapters 4 and 5 which follow in Supplement No. 1, summarize the regional rates of growth or decline for each of these markets for the years 1961 through 1966.

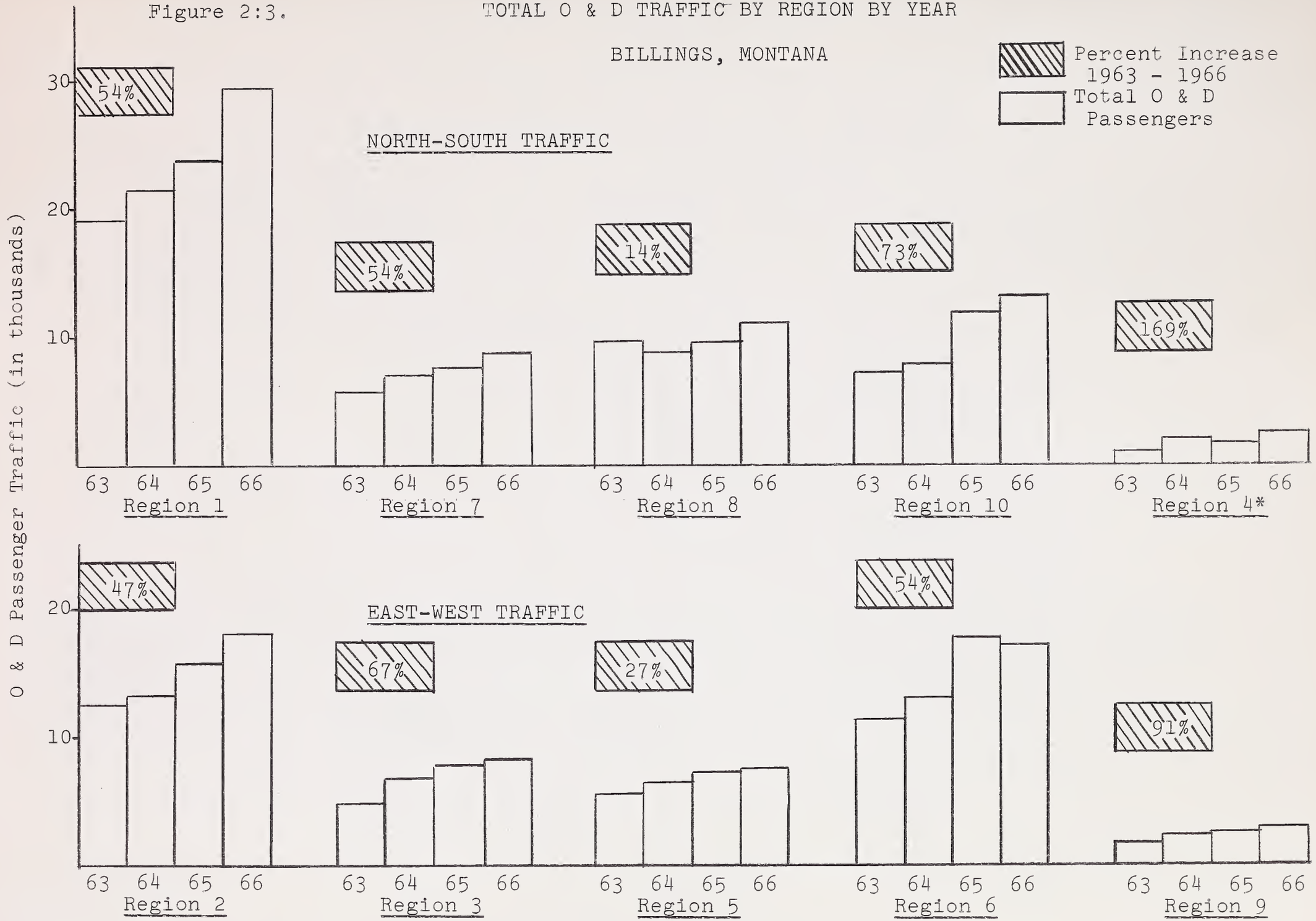
For the purposes of this chapter, it is important to examine three things concerning the regional traffic patterns: First, which regions are important generators of traffic for various Montana cities? Second, which regions are growing fastest in importance? Third, which Montana cities are oriented to which regions in the north/south or east/west traffic patterns?

Figures 2:3 through 2:10 will aid in this analysis. Each of these figures deals with a particular Montana city or group of cities and shows the amount of traffic from that city or group of cities to and from each region. The north/south regions appear on the upper portion of the graph and the east/west regions are on the lower portion. The years 1963, 1964, 1965, and 1966 are diagramed for each region in an attempt to illustrate the dynamic nature of the regional markets. In the shaded box associated with each region is indicated the percentage growth of traffic to that region between 1963 and 1966. Care should be taken in interpretating the percentage figures inasmuch as the absolute size of the various markets differs greatly.

Almost without exception, Regions 1 and 10 are the important north/south regions. These are essentially the Colorado and California markets respectively. Region 6 stands out as the important east/west region containing the states of Washington and Oregon. In analyzing the

Figure 2:3. TOTAL O & D TRAFFIC BY REGION BY YEAR

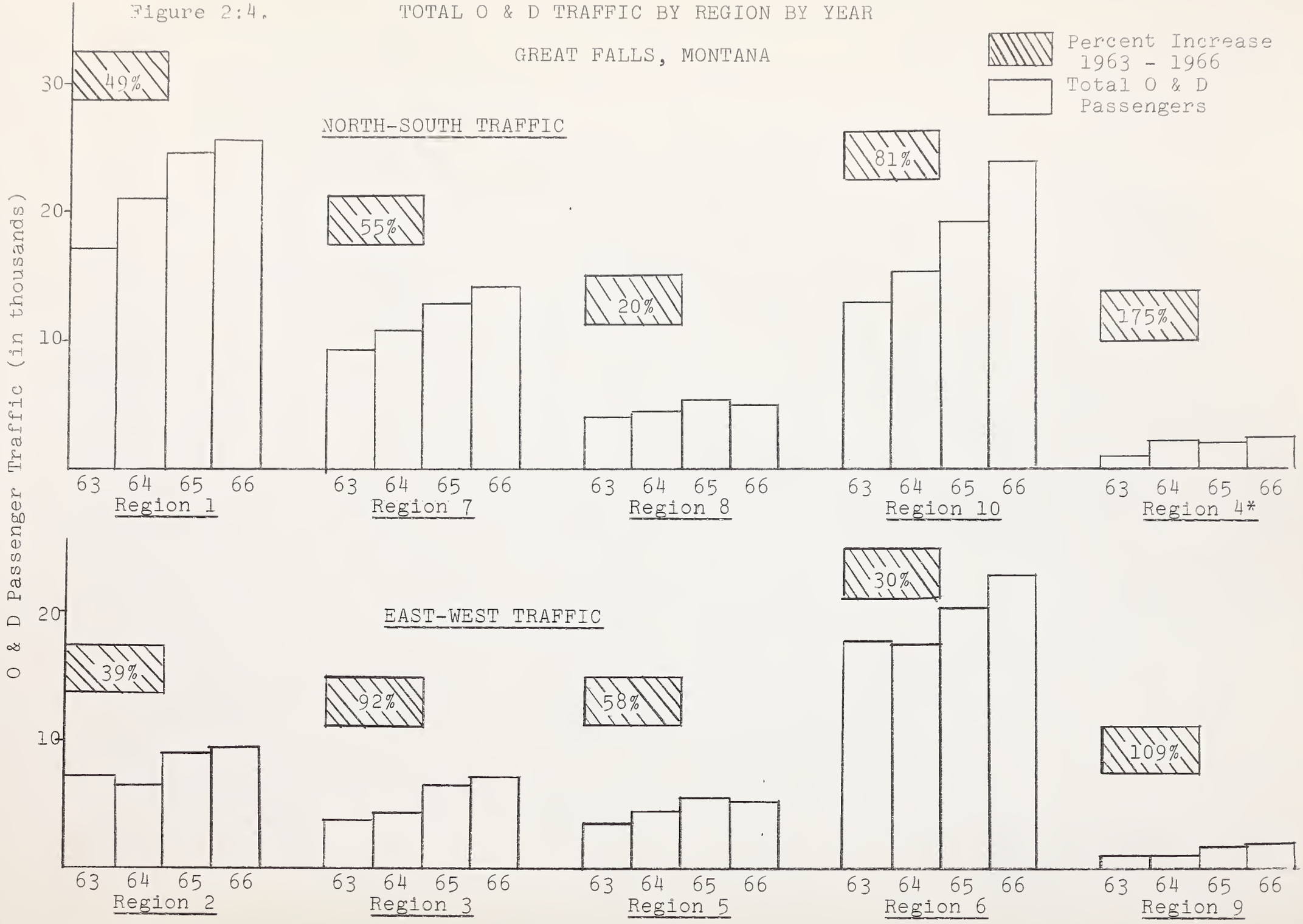
BILLINGS, MONTANA



*Region 4 was split in half between North-South and East-West directions.

Figure 2:4. TOTAL O & D TRAFFIC BY REGION BY YEAR

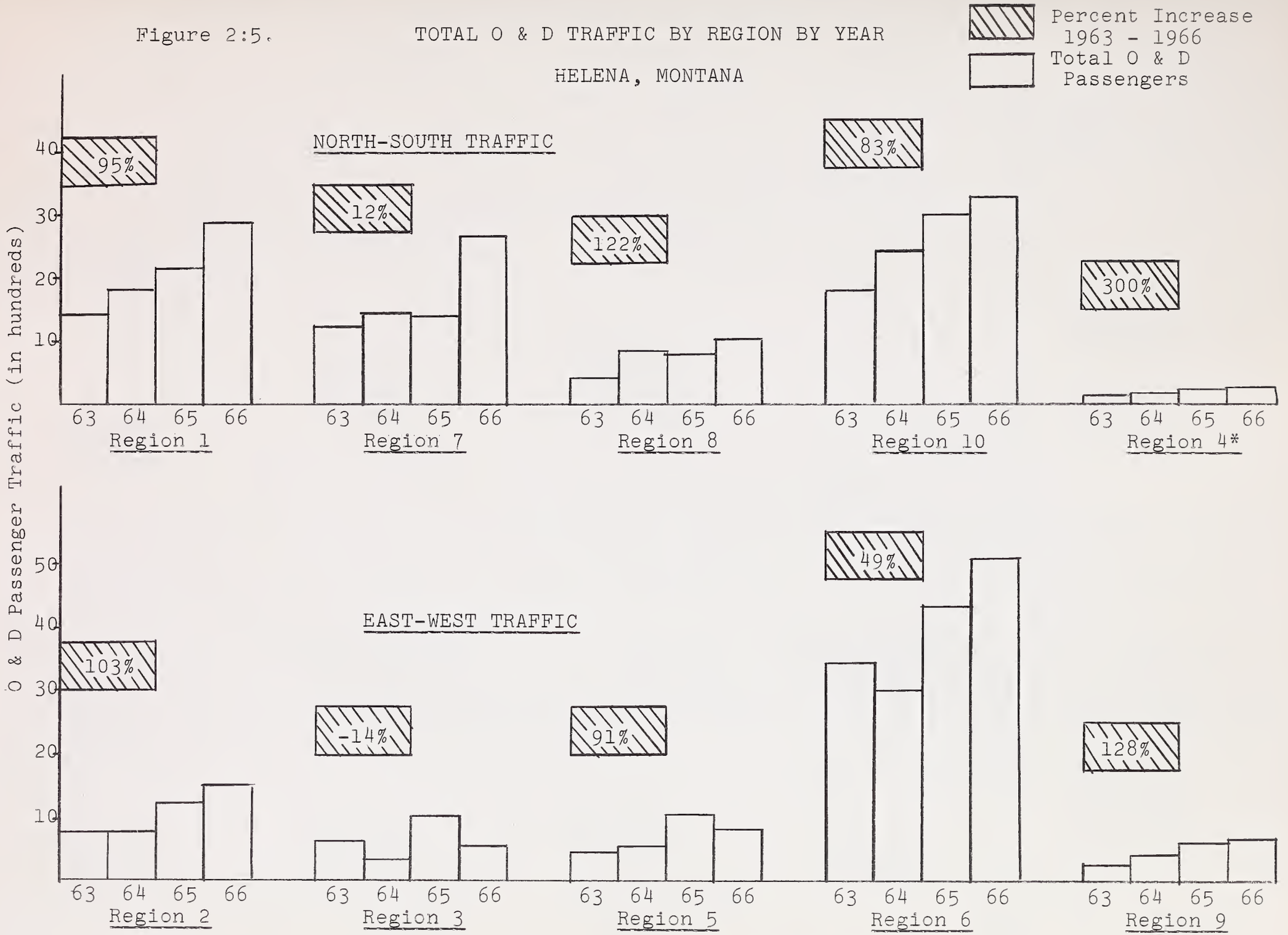
GREAT FALLS, MONTANA



*Region 4 was split in half between North-South and East-West directions.

Figure 2:5. TOTAL O & D TRAFFIC BY REGION BY YEAR

HELENA, MONTANA



*Region 4 was split in half between North-South and East-West directions.

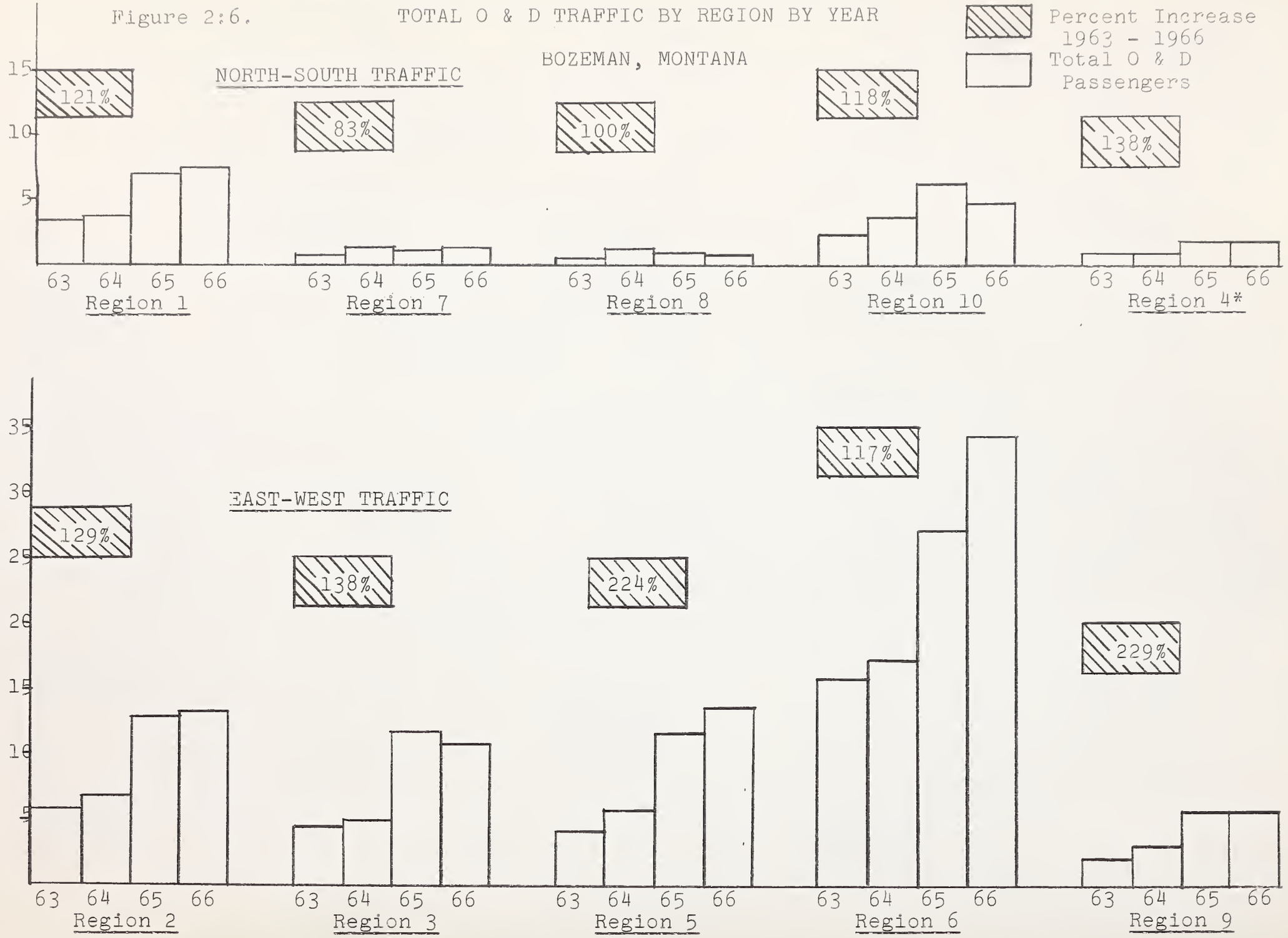
Figure 2:6. TOTAL O & D TRAFFIC BY REGION BY YEAR

BOZEMAN, MONTANA

Percent Increase 1963 - 1966

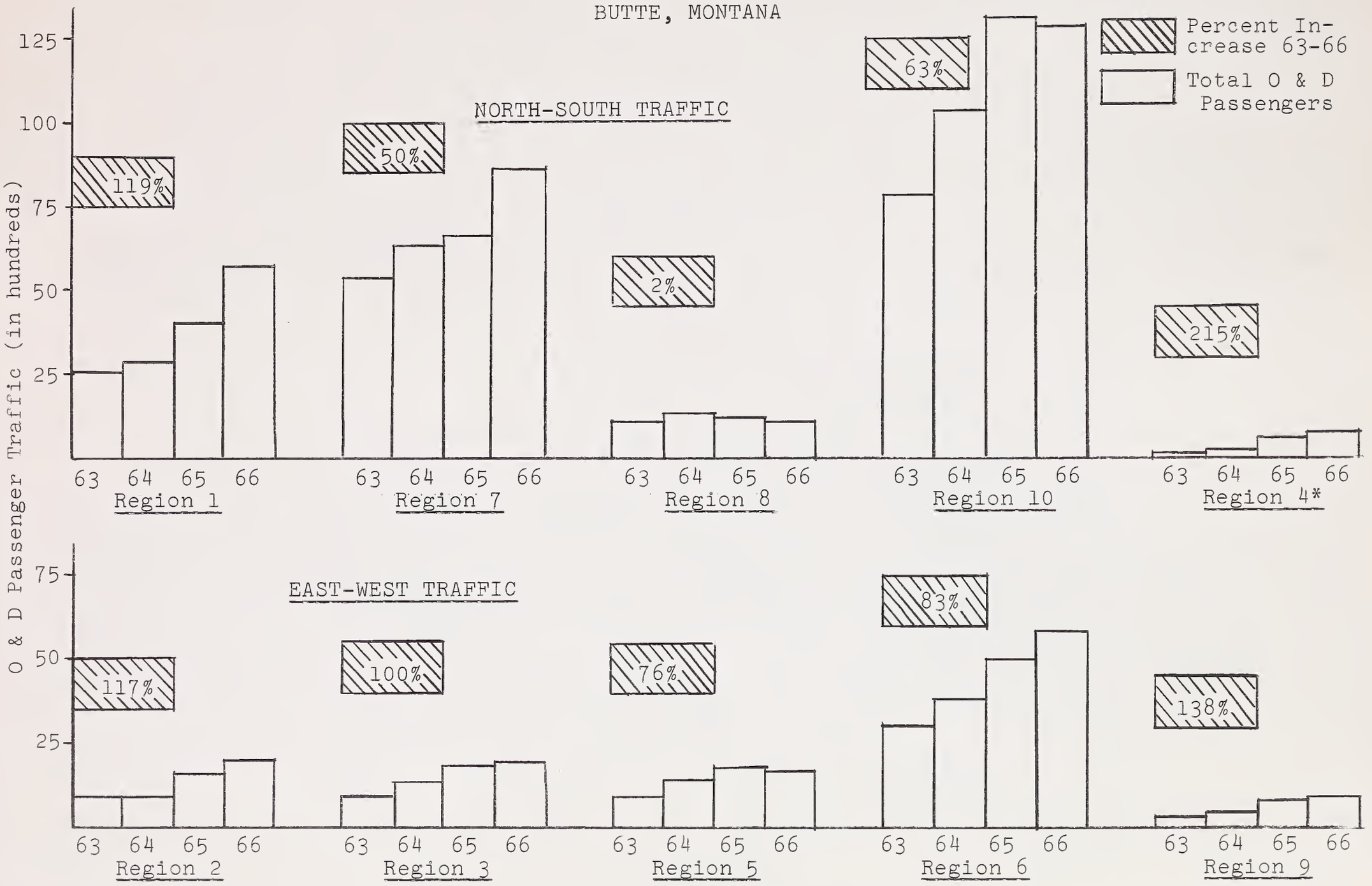
Total O & D Passengers

O & D Passenger Traffic (in hundreds)



*Region 4 was split in half between North-South and East-West directions.

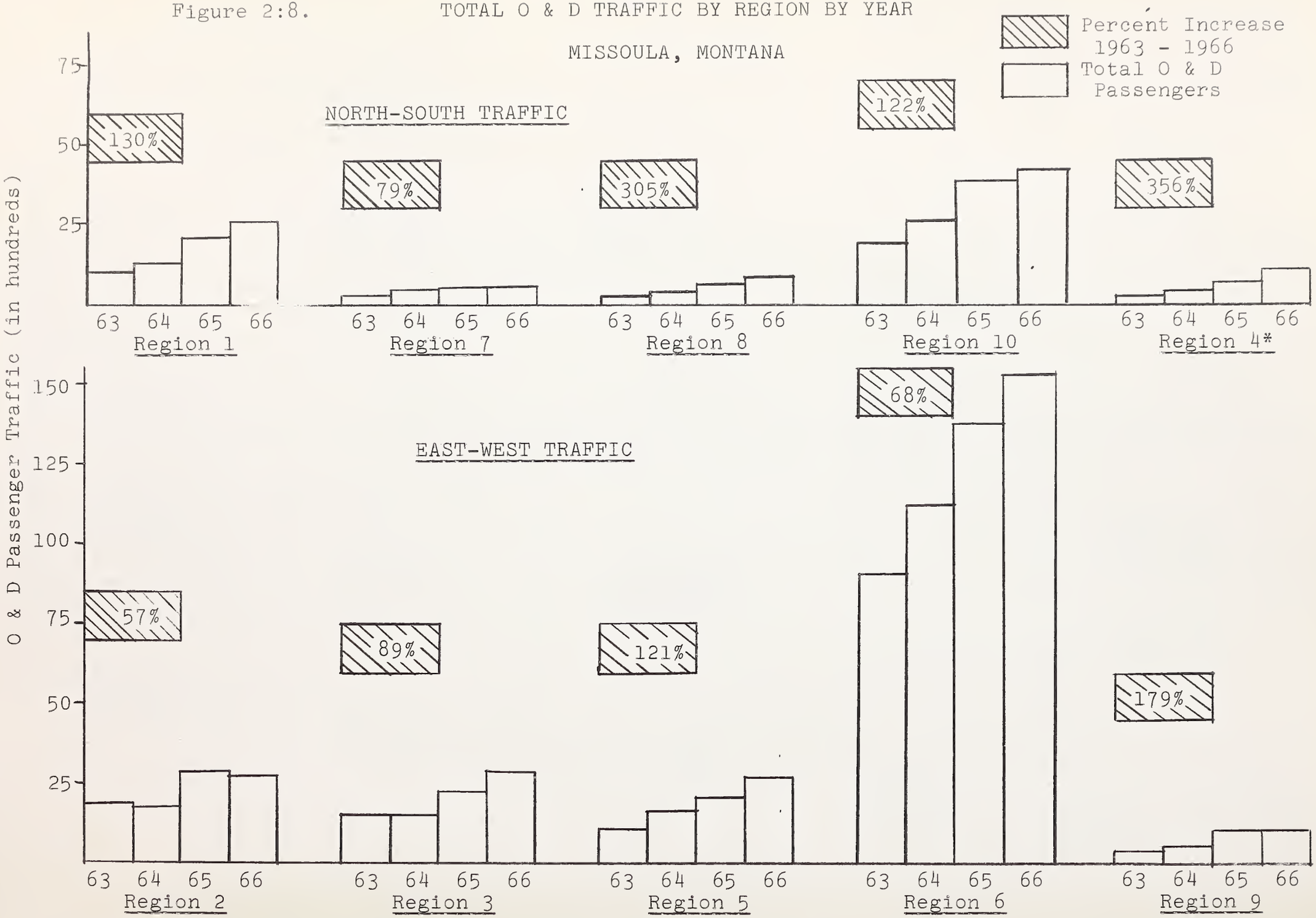
Figure 2:7. TOTAL O & D TRAFFIC BY REGION BY YEAR



*Region 4 was split in half between North-South and East-West directions.

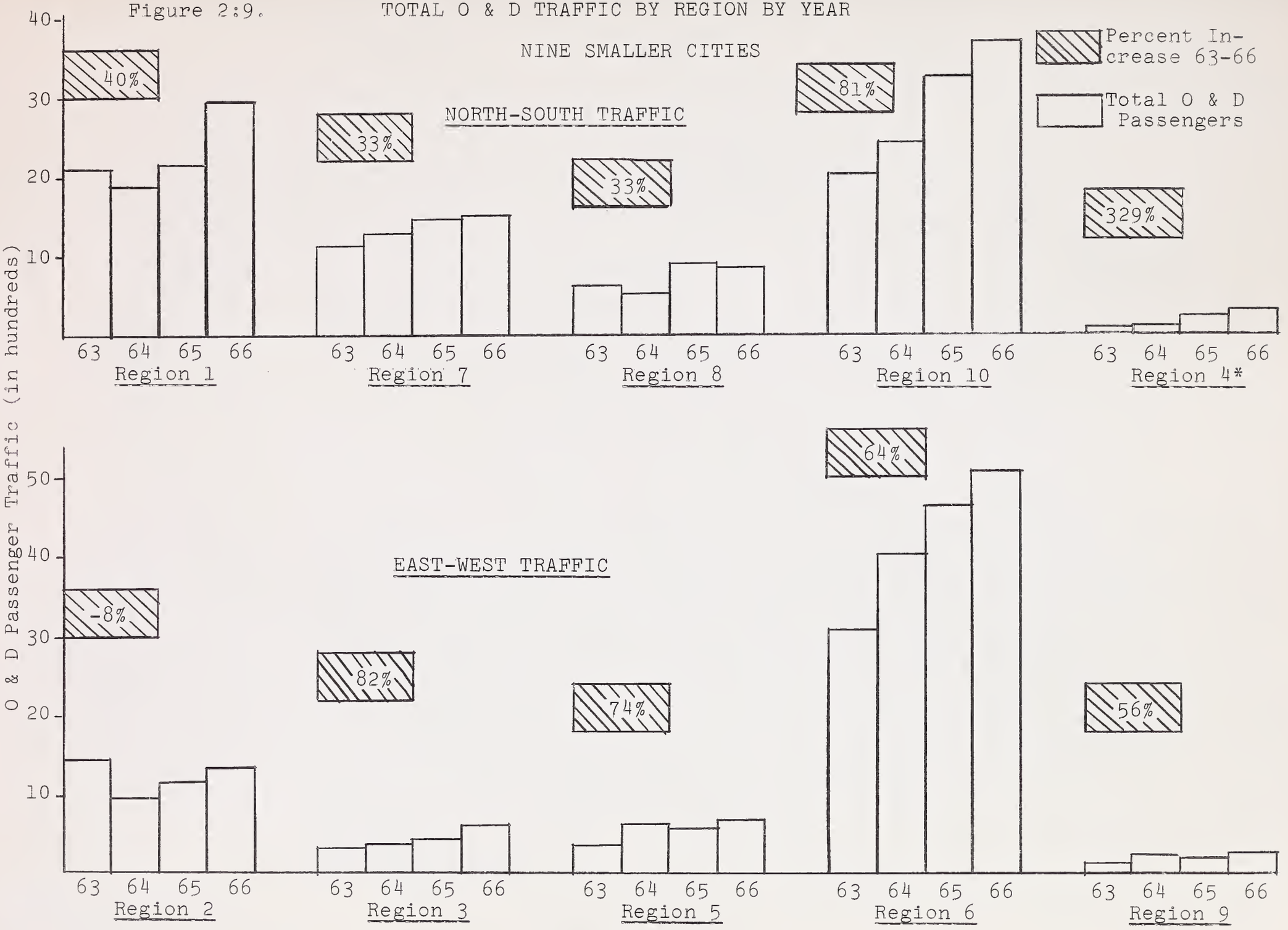
Figure 2:8. TOTAL O & D TRAFFIC BY REGION BY YEAR

MISSOULA, MONTANA



*Region 4 was split in half between North-South and East-West directions.

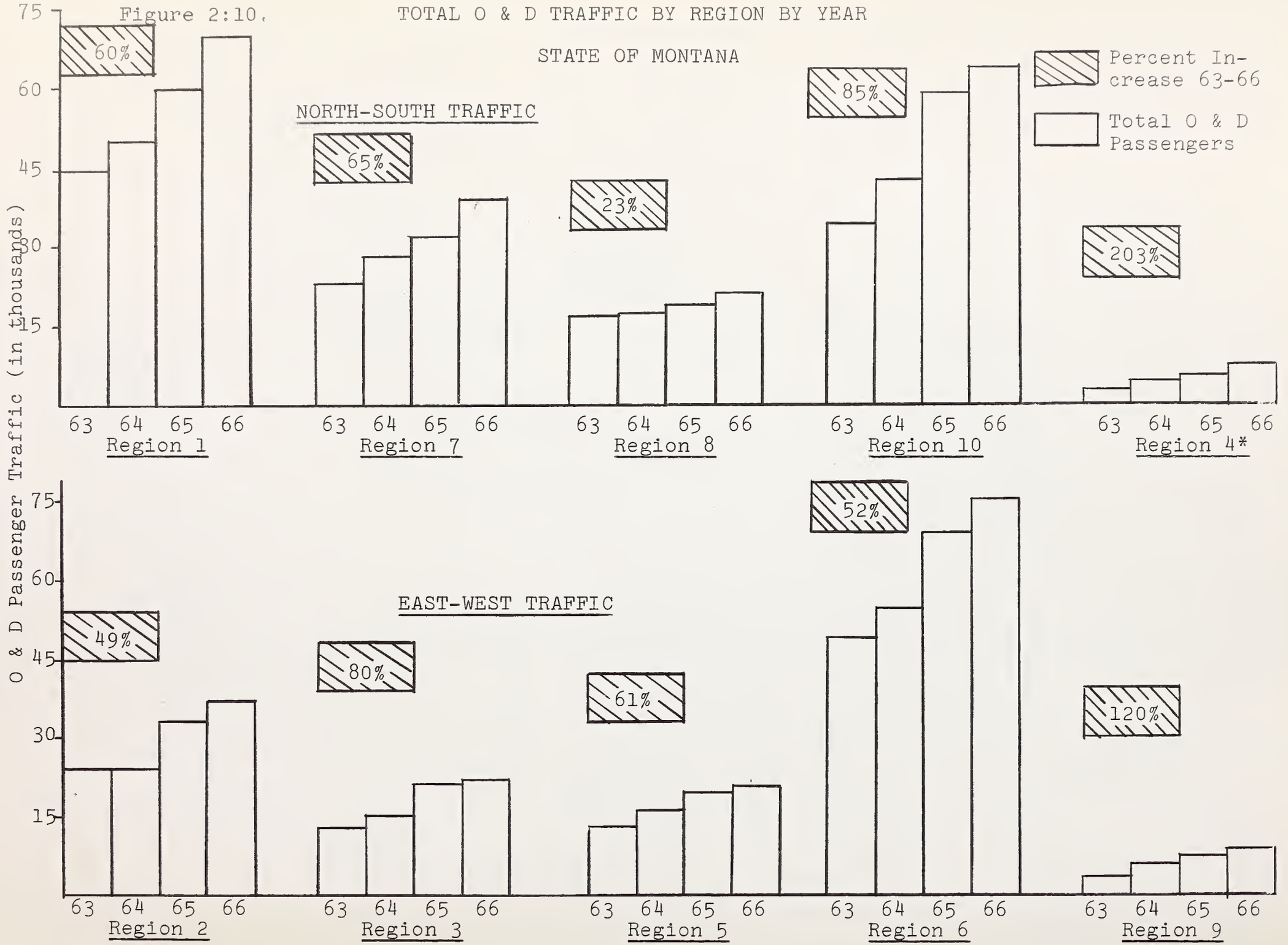
Figure 2:9. TOTAL O & D TRAFFIC BY REGION BY YEAR



*Region 4 was split in half between North-South and East-West directions.

Figure 2:10. TOTAL O & D TRAFFIC BY REGION BY YEAR

STATE OF MONTANA



*Region 4 was split in half between North-South and East-West directions.

traffic for the entire State, Region 6 is most important, followed by Regions 1 and 10 in that order. In 1966, Region 6 represented 20.7 percent of all out-of-state traffic for the entire State. Region 1 represented 19.3 percent and Region 10 represented 17.4 percent. Regions 7 and 2 (Utah and Minnesota) represented approximately ten percent each. Seventy-eight percent of the total out-of-state traffic was accounted for among these five regions.

Table 2:1 shows the relative importance of each region for the years 1963, 1964, 1965, and 1966 for the entire State. From this table it is evident that Region 6 is declining slightly in relative importance, while Region 10 is increasing slightly. Thus, California is becoming increasingly more important as a major out-of-state air market, while Washington and Oregon are losing ground when compared to total traffic on a percentage basis. This is not to say that significant increases are not being experienced in the Region 6 market, however. Also noteworthy is the fact that Region 8 (Wyoming) is steadily declining, while Region 3 (Illinois) is increasing. The other market regions have maintained their relative positions with Regions 2 (Utah) and 7 (Minnesota) competing closely for fourth and fifth position.

As previously mentioned, the ten regions into which the United States is divided are grouped into north/south and east/west sectors. This was done to obtain some idea of how certain Montana cities were oriented to service. Table 2:2 provides an indication of this orientation. The cities of Billings, Great Falls, and Helena show slight preference for north/south traffic patterns, similar to the State average of 52.6 percent north/south and 47.4 percent east/west. The cities of Missoula and Bozeman are heavily oriented to east/west traffic patterns as can be expected because of their total lack of north/south service during all or much of the historic period. Butte, on the other hand, is heavily oriented to the north/south direction. Reasons for this directional orientation will be elaborated in Chapter 3.

In addition to Table 2:2, Figure 2:11 is provided to aid in analyzing the directional traffic for Montana cities. Traffic in each direction is expressed as a percentage of the total traffic for the years 1962-1966 for each city or group of cities. The conclusion from this directional analysis is that Montana traffic is oriented more to a north/south direction than to an east/west direction.

Table 2:1. Summary of Regions Important to State of Montana, 1963, 1964, 1965, 1966

1963		1964		1965		1966	
Region	Percent of Total	Region	Percent of Total	Region	Percent of Total	Region	Percent of Total
R-6	22.1%	R-6	21.2%	R-6	21.1%	R-6	20.7%
R-1	19.7%	R-1	19.8%	R-1	18.5%	R-1	19.3%
R-10	15.3%	R-10	16.4%	R-10	17.9%	R-10	17.4%
R-2	11.1%	R-7	10.7%	R-2	10.3%	R-7	10.5%
R-7	10.3%	R-2	9.4%	R-7	9.8%	R-2	10.2%
R-8	7.3%	R-8	6.5%	R-3	6.5%	R-3	6.2%
R-5	5.7%	R-5	6.3%	R-5	6.1%	R-5	5.7%
R-3	5.6%	R-3	5.9%	R-8	5.8%	R-8	5.6%
R-9	1.7%	R-9	2.1%	R-9	2.4%	R-9	2.3%
R-4	1.1%	R-4	1.8%	R-4	1.7%	R-4	2.0%

Table 2:2. Directional Traffic for Montana Cities*

	EAST-WEST			NORTH-SOUTH		
	Traffic	Percent of Total	State Average	Traffic	Percent of Total	State Average
			BILLINGS			
1959	31,380	48.8%	50.2%	32,860	51.2%	49.8%
1960	31,490	50.0	52.1	31,470	50.0	47.9
1961	27,070	45.5	45.4	32,370	54.5	54.6
1962	32,650	52.0	53.2	30,190	48.0	46.8
1963	36,100	46.0	46.8	42,390	54.0	53.2
1964	42,200	47.4	45.8	46,790	52.6	54.2
1965	51,510	48.9	47.2	53,790	51.1	52.8
1966	54,750	46.4	46.1	63,250	53.6	53.7
1962-66		47.9	47.4		52.1	52.6
			GREAT FALLS			
1959	25,560	48.9%	50.2%	26,660	51.1%	49.8%
1960	28,860	51.6	52.1	27,090	48.4	47.9
1961	26,330	42.4	45.4	35,720	57.6	54.6
1962	35,990	52.5	53.2	32,510	47.5	46.8
1963	33,830	43.4	46.8	44,130	56.6	53.2
1964	35,240	40.0	45.8	52,830	60.0	54.2
1965	45,440	41.9	47.2	62,990	58.1	52.8
1966	49,350	41.4	46.1	69,970	58.6	53.7
1962-66		43.2	47.4		56.8	52.6

Table 2:2. (cont.)

	EAST-WEST			NORTH-SOUTH		
	Traffic	Percent of Total	State Average	Traffic	Percent of Total	State Average
			HELENA			
1959	4,930	51.7%	50.2%	4,600	48.3%	49.8%
1960	3,490	48.7	52.1	3,680	51.3	47.9
1961	2,810	45.1	45.4	3,420	54.9	54.6
1962	4,500	53.3	53.2	3,940	46.7	46.8
1963	5,580	52.8	46.8	4,980	41.2	53.2
1964	5,130	43.8	45.8	6,570	56.2	54.2
1965	8,380	52.8	47.2	7,500	47.2	52.8
1966	8,780	47.1	46.1	9,880	52.9	53.7
1962-66		49.6	47.4		50.4	52.6
			BUTTE			
1959	6,450	35.7%	50.2%	11,640	64.3%	49.8%
1960	5,630	31.1	52.1	12,460	68.9	47.9
1961	5,060	26.7	45.4	13,920	73.3	54.6
1962	5,800	29.7	53.2	13,710	70.3	46.8
1963	6,500	27.3	46.8	17,280	72.7	53.2
1964	8,210	28.0	45.8	21,100	72.0	54.2
1965	11,140	30.4	47.2	25,450	69.6	52.8
1966	12,660	41.0	46.1	28,300	59.0	53.7
1962-66		29.5	47.4		70.5	52.6

Table 2:2. (cont.)

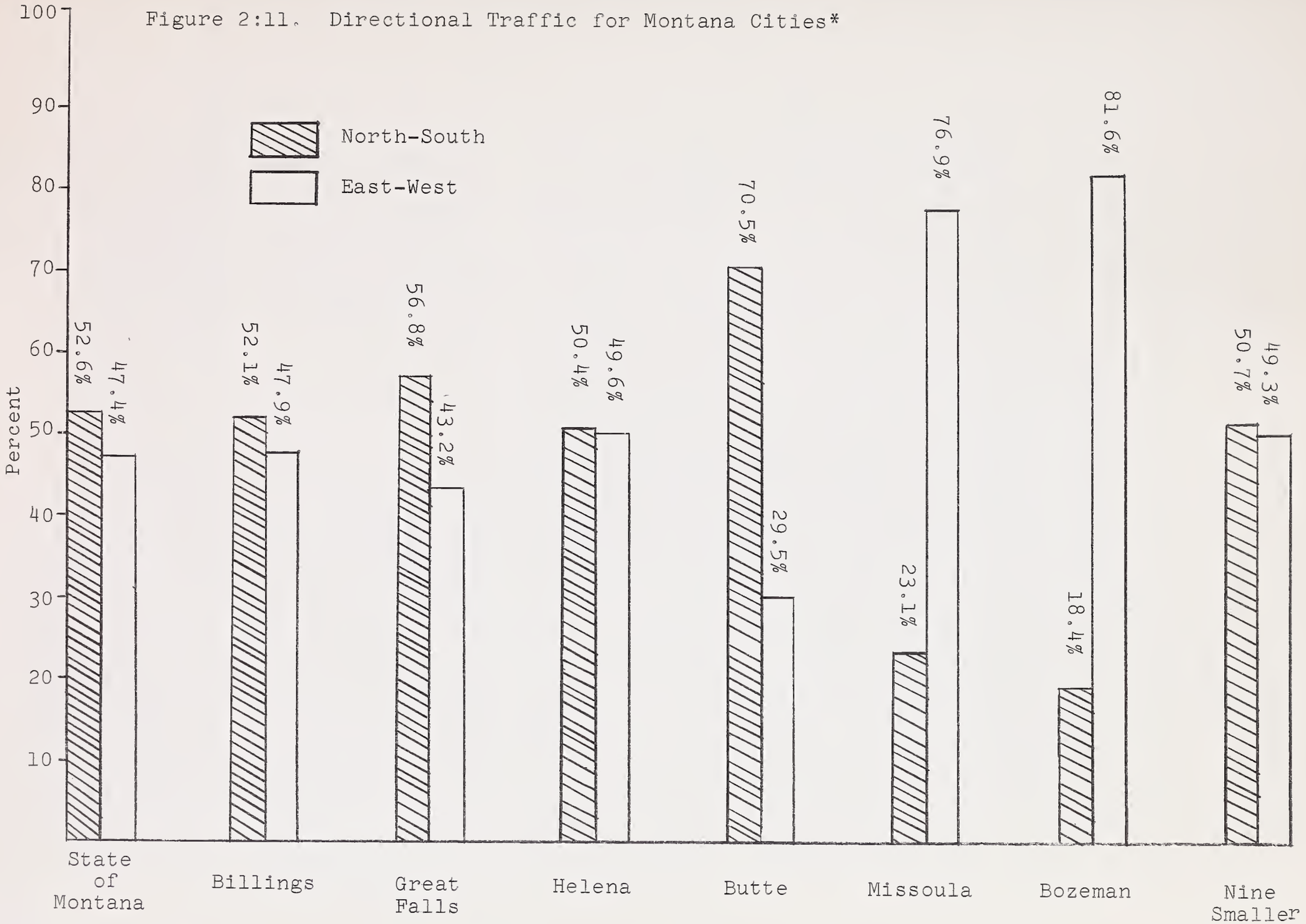
	EAST-WEST			NORTH-SOUTH		
	Traffic	Percent of Total	State Average	Traffic	Percent of Total	State Average
			MISSOULA			
1959	9,230	75.3%	50.2%	3,030	24.7%	49.8%
1960	9,940	78.4	52.1	2,740	21.6	47.9
1961	8,200	78.6	45.4	2,230	21.4	54.6
1962	12,260	81.1	53.2	2,860	18.9	46.8
1963	14,130	79.4	46.8	3,670	20.6	53.2
1964	16,860	78.2	45.8	4,700	21.8	54.2
1965	22,660	75.6	47.2	7,300	24.4	52.8
1966	25,370	74.2	46.1	8,820	25.8	53.7
1962-66		76.9	47.4		23.1	52.6
			BOZEMAN			
1959	3,430	79.0%	50.2%	910	21.0%	49.8%
1960	3,390	83.1	52.1	690	16.9	47.9
1961	1,740	79.1	45.4	460	20.9	54.6
1962	2,850	81.0	53.2	670	19.0	46.8
1963	3,230	82.2	46.8	70	17.8	53.2
1964	3,800	79.2	45.8	1,000	20.8	54.2
1965	6,990	81.1	47.2	1,630	18.9	52.8
1966	7,820	83.8	46.1	1,510	16.2	53.7
1962-66		81.6	47.4		18.4	52.6

Table 2:2. (cont.)

	EAST-WEST			NORTH-SOUTH		
	Traffic	Percent of Total	State Average	Traffic	Percent of Total	State Average
			NINE SMALLER CITIES			
1959	4,780	46.8%	50.2%	5,440	53.2%	49.8%
1960	5,270	63.9	52.1	2,980	36.1	47.9
1961	4,730	58.3	45.4	3,390	41.7	54.6
1962	5,050	61.0	53.2	3,230	39.0	46.8
1963	5,480	48.1	46.8	5,910	51.9	53.2
1964	6,200	49.9	45.8	6,220	50.1	54.2
1965	6,850	45.5	47.2	8,190	54.5	52.8
1966	8,110	47.2	46.1	9,090	52.8	53.7
1962-66		49.3	47.4		50.7	52.6
			STATE OF MONTANA			
1959	85,760	50.2%		85,140	49.8%	
1960	88,070	52.1		81,110	47.9	
1961	75,940	45.4		91,510	54.6	
1962	99,110	53.2		87,100	46.8	
1963	104,840	46.8		119,070	53.2	
1964	117,620	45.8		139,230	54.2	
1965	153,530	47.2		171,750	52.8	
1966	167,650	46.1		195,900	53.7	
1962-66		47.4			52.6	

*North-South Traffic: Regions 1, 7, 8, 10, and half of 4.
East-West Traffic: Region 2, 3, 5, 6, 9, and half of 4.

Figure 2:11. Directional Traffic for Montana Cities*



*1962-1966 expressed as a percent of total traffic.

MAJOR AIR MARKETS

The preceding section has suggested which cities and states are major out-of-state markets for Montana. These are likely to be cities and states which lie in the important market regions for the State. Below are two tables which rank the important major out-of-state city markets and the important major state markets for Montana. Data in these tables is condensed from Chapter 7 in Statistical Supplement No. 1 and from Chapter 1 in Statistical Supplement No. 2. Reference should be made to the Statistical Supplements for the detail behind this data. The comparable detailed data for each individual city in Montana is also included in the Statistical Supplements.

In Table 2:3, fifteen major out-of-state city markets are listed. Three years are included in the analysis, 1965 and 1966 being full calendar years and 1967 being the first three quarters of that year and the fourth quarter of 1966, since data for the fourth quarter of 1967 was not available at the time of publication. The cities are ranked in order of importance in 1967. It should be noted that the statistics indicated are reported exclusive of the international portion of journey traffic to Great Falls for all three years.

The fifteen cities may be divided into four separate groups in terms of size of market. Seattle and Denver rank first and second, each with over 38,000 passengers reported in 1967. A gap of 11,000 then occurs in dropping to the third largest market, San Francisco. Then follow Los Angeles, Spokane, Minneapolis, Salt Lake City, and Portland all with over 20,000 passengers reported in 1967. The cities of Chicago and New York rank ninth and tenth with 14,000 each. Finally, the cities of Washington, D. C., Las Vegas, Casper, San Diego, and Kansas City had less than 10,000 passengers.

Also reported in the table are the number of passengers per day, both inbound and outbound, between Montana and these major out-of-state city markets. This ranges from 11.4 for Kansas City to 128.0 for Seattle. Within any of the four groups of cities, the ordering occasionally changes from year to year. For example, in 1966, Salt Lake City was fifth instead of seventh as it was in 1967. Nevertheless, the major city markets are well identified and ordered in this classification.

Table 2:3. Major Out-of-State City Markets for Montana, 1965, 1966, and 1967

City	1965		1966		1967*	
	Total	Per Day	Total	Per Day	Total	Per Day
Seattle	31,060	85.1	34,950	95.8	46,710	128.0
Denver	28,020	76.8	36,060	98.8	38,150	104.5
San Francisco	22,980	63.0	23,270	63.8	27,150	74.4
Los Angeles	21,050	57.7	22,200	60.8	26,700	73.2
Spokane	19,050	52.2	20,120	55.1	26,170	71.7
Minneapolis	17,720	48.5	18,730	51.3	22,700	62.2
Salt Lake City	17,010	46.6	22,160	60.7	22,090	60.5
Portland	15,080	41.3	16,470	45.1	20,130	55.2
Chicago	10,920	29.9	11,560	31.7	14,220	39.0
New York	11,490	31.5	10,870	29.8	14,030	38.4
Washington D. C.	5,940	16.3	6,520	17.7	8,030	22.0
Las Vegas	4,240	11.6	5,060	13.9	6,030	16.5
Casper	5,120	14.0	4,920	13.5	5,570	15.3
San Diego	4,630	12.7	5,140	14.1	4,860	13.3
Kansas City	2,870	7.9	3,540	9.7	4,170	11.4
Total	217,180	595.1	241,570	661.8	286,710	785.6

*Data for 1967 consists of first three quarters of 1967 plus fourth quarter of 1966.

No detailed major market analysis is included in this chapter for every city in the State. Chapter 7 of Supplement No. 1 should be consulted for this information. A summarizing comment or two at this point is appropriate, however. Among the big six cities in Montana, major out-of-state city markets are ranked in various orders of importance. Much of this is dependent upon the service available to each city during the period 1959-1966. For Missoula and Bozeman, for example, the cities of Salt Lake and Denver are either listed very low or not listed at all. This is a direct result of the lack of north/south service to these cities during the study period.

With this exception, however, five cities (Seattle, Denver, Salt Lake City, San Francisco, and Los Angeles) are always found among the top seven markets for each of the big six Montana cities. Again, one is aware of the importance of markets to the south and the orientation of Montana traffic in this direction. With the recent addition of new or improved north/south service for the cities of Bozeman and Missoula, this orientation should become even more apparent in the future.

It is also important to look at the major state markets for Montana air traffic. Table 2:4 summarizes this information by listing in order the top twenty state markets in 1966. These markets logically break into five groups in terms of total size. Three markets record above 40,000 passengers; two, between 20,000 and 30,000; five, between 10,000 and 20,000; six, between 5,000 and 10,000; and four, between 3,500 and 5,000.

The state of California ranks a definite first in importance. Major city markets in this State include San Francisco, Los Angeles, and San Diego. Washington is second with over 95 percent of the total traffic to that State either originating or terminating in the cities of Seattle and Spokane. The third most important state to Montana air markets is Colorado, within which Denver represents over 90 percent of the total traffic. These three states together account for 44 percent of Montana's total out-of-state air traffic. Adding in the two next most important states, Utah and Minnesota, raises this figure to 58 percent. Thus, out of the top five state markets, three, accounting for 37 percent of the total out-of-state traffic, lie to the south of Montana, and two, accounting for 21 percent, lie to either the east or west of the State.

Among the next fifteen state markets, seven lie in east/west regions and eight lie in north/south regions.

Table 2:4. Major Out-of-State State Markets for Montana, 1965, 1966

State	1965		1966	
	Total	Per Day	Total	Per Day
California	58,190	159.4	63,330	173.5
Washington	52,420	143.6	57,470	157.5
Colorado	33,810	92.6	40,210	110.2
Utah	19,020	52.1	28,830	79.0
Minnesota	18,190	49.8	20,040	54.9
Oregon	16,340	44.8	17,790	48.7
Wyoming	13,130	36.0	14,130	38.7
Illinois	12,720	34.8	13,230	36.2
New York	13,570	37.2	13,180	36.1
Texas	10,590	29.0	11,960	32.8
North Dakota	8,980	24.6	9,580	26.2
Nevada	7,140	19.6	8,280	22.7
Washington D.C.	5,990	16.4	6,520	17.9
Idaho	5,710	15.6	6,240	17.1
Arizona	5,730	15.7	6,100	16.7
Missouri	5,500	15.1	5,570	15.3
Oklahoma	3,640	10.0	4,200	11.5
Pennsylvania	3,540	9.7	3,970	10.9
Michigan	4,150	11.4	3,830	10.5
Ohio	2,970	8.1	3,760	10.3
Total	301,330	825.6	338,220	926.7

More detail on this major market analysis by city and state can be found in Chapter 7 of Statistical Supplement No. 1 and Chapter 1 of Statistical Supplement No. 2.

It is concluded from the above discussion that Montana is oriented more to the southern markets than to eastern or western markets. This conclusion is based entirely upon origin and destination statistics for out-of-state markets. Yet, not all markets are important only as destination points for Montana air traffic. Cities on the west coast such as Seattle and San Francisco, or New York on the east coast, obviously serve as destination points since no other major markets can be reached via them. Denver, Salt Lake City, Minneapolis, and Chicago, however, serve as very important rotating or connecting terminals for origin and destination traffic with other markets. When rotating terminal data is added to origin and destination data, the ordering changes somewhat. Table 2:5 summarizes this rotating terminal data for these four cities, which are the most important connecting points for Montana traffic. Other cities also serve this purpose, but not enough to warrant any detailed attention. Again, all the data was taken from the Civil Aeronautics Board origin and destination reports.

Table 2:5. Major Rotating Terminal Points for Montana Cities, 1967*

City	Denver	Salt Lake City	Chicago	Minneapolis
Billings	12,710	10,480	6,340	3,280
Great Falls	16,090	4,030	7,030	2,800
Helena	850	1,410	780	610
Bozeman	460	280	880	880
Missoula	1,390	130	3,120	1,850
Butte	2,350	4,080	1,850	1,070
Nine Smaller	2,840	3,220	620	300
Total State	36,690	23,630	20,620	10,790

*Data consists of sum of traffic for first three quarters of 1967 plus fourth quarter of 1966.

Table 2:5 shows that Denver and Salt Lake City are the most important rotating terminal points. Denver served 36,690 passengers in transit in 1967. This accounts for nearly as many passengers as were reported originating and terminating at Denver (38,150 passengers). Salt Lake City served more passengers as a connecting point (23,630) than it served as an origin or destination (22,090). Again, there is evidence of a southern orientation for Montana traffic.

The markets of Chicago and Minneapolis, however, are also important rotating points. Chicago is used much more for connecting purposes to other points than it is for origin and destination purposes. There were 20,620 passengers in 1967 who used Chicago for connecting purposes, while only 14,220 used it as an origin or destination point. Minneapolis is used approximately half as much for rotating purposes as it is for origination and destination traffic.

Adding these figures to those in Table 2:3 for 1967, changes the order of the cities somewhat. Below is a summary of the eight most important out-of-state city markets as they are ordered when both origin and destination and rotating terminal traffic are considered.

Table 2:6. Summary of Major Out-of-State City Markets For Montana, 1967*

City	Traffic	City	Traffic
DENVER	74,840	MINNEAPOLIS	33,840
SEATTLE	46,710	SAN FRANCISCO	27,150
SALT LAKE CITY	45,720	LOS ANGELES	26,700
CHICAGO	34,840	SPOKANE	26,170

*Data for 1967 consists of first three quarters of 1967 plus fourth quarter of 1966.

Denver becomes the overwhelming number one market in terms of importance with a total of 74,840 passengers. Seattle then becomes second with 46,710. Salt Lake City moves up from seventh to third falling only slightly behind Seattle. Chicago moves up from ninth to fourth and Minneapolis moves

from sixth into fifth position. This shifts San Francisco, Los Angeles, and Spokane into sixth, seventh, and eighth places respectively. Despite the upward shifts of Chicago and Minneapolis, the use of Denver and Salt Lake City markets still establishes a southern market preference. Among the top five markets, Denver and Salt Lake City still account for over fifty percent of the total traffic.

ANALYSIS OF IN-STATE TRAFFIC

In analyzing traffic between Montana cities one definite trend, the emergence of Great Falls and Billings as major air markets and air hubs for intrastate air traffic, is apparent. As indicated in Chapter 1 of Supplement No. 2, Billings and Great Falls accounted for 26,220 and 25,660 intrastate origin and destination passengers respectively in 1966. This represented just under 70 percent of the total intrastate air traffic during that year. This trend is well established in that for each of the preceding five years these two markets represented from 66 to 70 percent of total intrastate traffic.

It is also evident that the Billings market is consistently larger than the Great Falls market, but only slightly so. During two of these periods the markets were nearly equal in size. It is difficult to establish, however, whether either of the markets is emerging as the more important originating and terminating point for Montana air traffic. This difficulty is caused partially by the short data period but more so by the effects of the severe air strikes in 1961 and 1966 which disrupted any normal trends of growth. Present information indicates that Billings and Great Falls are likely to maintain equal importance as major markets for intrastate origin and destination traffic.

A further analysis of the data is presented in Tables 2:7 and 2:8 and Figure 2:12, which show the traffic between each city in Montana and the two major markets of Great Falls and Billings. This information is condensed from Tables 76 through 83 of Supplement No. 1. It is apparent that three Eastern Montana cities (Wolf Point, Glasgow, and Havre) are oriented toward Great Falls more than toward Billings. The other four (Lewistown, Miles City, Glendive, and Sidney) are oriented more toward Billings than Great Falls. Among the major markets in Montana, it is found that Butte traffic is greater with Great Falls than it is with Billings.

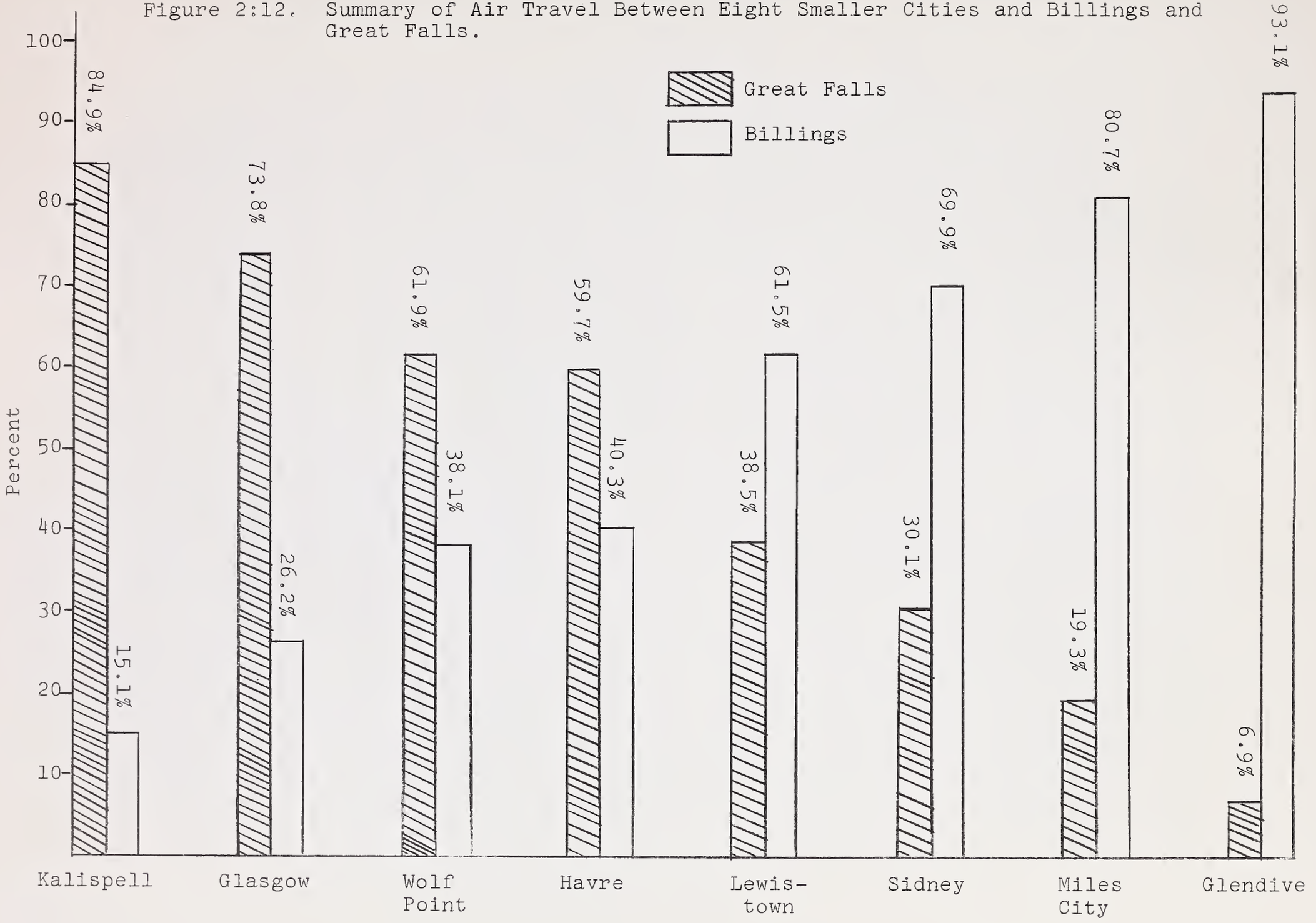
Table 2:7. Summary of Air Travel Between Eight Smaller Cities and Billings and Great Falls

City	1962	1963	1964	1965	1966
	GREAT FALLS				
Wolf Point	160	330	220	210	430
Glasgow	380	540	620	740	860
Havre	310	190	290	330	270
Lewistown	170	150	230	250	270
Miles City	60	80	250	90	90
Glendive	30	50	30	20	50
Sidney	130	390	370	230	320
TOTAL SEVEN EASTERN CITIES	1,240	1,730	2,010	1,870	2,290
Kalispell	530	350	870	750	1,190
TOTAL	1,770	2,080	2,880	2,620	3,480
	BILLINGS				
Wolf Point	150	300	210	160	160
Glasgow	270	280	300	190	300
Havre	100	220	190	230	180
Lewistown	200	320	350	380	470
Miles City	340	520	590	530	680
Glendive	270	520	520	430	400
Sidney	390	950	880	590	670
TOTAL SEVEN EASTERN CITIES	1,720	3,110	3,040	2,510	2,860
Kalispell	80	100	80	120	300
TOTAL	1,800	3,210	3,120	2,630	3,160

Table 2:8. Summary of Air Travel Between Four Major Montana Cities and Billings and Great Falls

City	1962	1963	1964	1965	1966
			GREAT FALLS		
Bozeman	--	40	50	140	140
Butte	1,650	2,740	2,910	2,450	3,270
Helena	730	940	760	570	870
Missoula	980	870	1,530	870	1,480
Total	3,360	4,590	5,250	4,030	5,760
			BILLINGS		
Bozeman	670	780	980	490	560
Butte	1,460	1,440	1,610	1,600	1,520
Helena	860	1,040	1,410	1,390	1,260
Missoula	1,730	2,280	2,810	2,940	3,490
Total	4,720	5,540	6,810	6,420	6,830

Figure 2:12. Summary of Air Travel Between Eight Smaller Cities and Billings and Great Falls.



Bozeman, Helena, and Missoula are strongly oriented toward the Billings market, however.

Without question, the statistics are in part determined by the patterns of service available to the various communities. Yet, it is useful to know which markets have historically been important for each city, especially in those cities where service has been available to both Billings and Great Falls.

In an analysis similar to that used for major out-of-state city markets, it is important to look at the role of Billings and Great Falls as connecting points for flights to other markets. As indicated in Table 2:9, 7,070 passengers used Great Falls in 1966 as a connecting point for flights to other markets. These passengers all originated or terminated in Montana cities. This number does not include persons that used Great Falls as a connecting point for a flight between two out-of-state markets, nor passengers who made on-line connections. On-line connections, however, are an important aspect of service at both Billings and Great Falls.

During the same year, 9,540 passengers used Billings as a connecting point. In the case of Great Falls, 77 percent as many passengers used the city as a connecting point as used it as either an origination or destination point; exclusive of the direct Billings/Great Falls traffic. In the case of Billings, 95 percent as many passengers used the city for connections as used it for originations and destinations. Billings was used approximately 35 percent more for this purpose than was Great Falls. Thus, the importance of these two cities as air hubs, as well as major air markets, is apparent. The greater relative importance of Billings over Great Falls as an air hub is understandable in that there are fewer out-of-state markets which can logically be reached by traveling north to Great Falls from most Montana cities as opposed to traveling south, east, or west to Billings.

One additional point needs attention in the Great Falls/Billings analysis, that being the direct Great Falls/Billings air traffic which is summarized below. It is apparent that a strong community of interest between these two major centers does exist. Traffic between 1962 and 1966 rose by just over 110 percent, much more than the 75 percent increase of total intrastate air traffic during the same period. These statistics also represent approximately 60 percent of the total intrastate origin and destination traffic for each of these cities for these years.

Table 2:9. Major Rotating Terminal Points for Intrastate Air Travel

Cities	Connecting Terminals	
	Billings	Great Falls
Billings	0	900
Great Falls	1,790	0
Butte	760	970
Bozeman	1,120	10
Helena	800	620
Missoula	2,260	120
Total Big Six	6,730	2,620
Glasgow	180	1,130
Glendive	590	30
Havre	50	440
Kalispell	60	1,970
Lewistown	380	380
Miles City	1,100	40
Sidney	440	150
Wolf Point	10	270
West Yellowstone	0	40
Total Nine Smaller	2,810	4,450
Total State	9,540	7,070

Air Traffic Between Billings and Great Falls

1962	1963	1964	1965	1966
7,740	11,010	11,170	12,910	16,300

Intrastate air traffic is also important to the city of Helena, especially from the eight smaller cities in the State. Specific data supporting the community of interest between Montana cities and the capitol city appears on the next few pages of this chapter. Historic air traffic data, as an indication of this shared interest, is summarized below.

Table 2:10. Air Traffic Between Eight Smaller Cities and Major Montana Markets Other than Billings and Great Falls

City	1962	1963	1964	1965	1966
Helena	60	100	260	110	270
Butte	50	210	110	130	110
Missoula	20	50	50	50	60
Bozeman	40	10	30	60	30

The summary shows that Helena ranks first among these four markets in terms of origin and destination traffic from the eight smaller air markets in Montana. Helena, of course, follows Billings and Great Falls. This data helps demonstrate the community of interest between these outlying cities and the State Capitol, an important factor in the analysis (Chapter 4) of the need for a commuter system to serve Montana.

TELEPHONE AND COMMUNITY INTEREST ANALYSIS

In an effort to determine the communities of interest among various Montana cities and between Montana cities and major out-of-state markets, two surveys were conducted. One consisted of a sampling of phone calls between city pairs in Montana and between Montana cities and out-of-state markets. Only those cities with scheduled air service were sampled. The other survey consisted of mailed questionnaires to Chamber of Commerce members of the eight smaller Montana cities. This questionnaire was designed to determine: (1) which Montana cities and which out-of-state cities were most important to the major businesses in each of these communities, and (2) how -- by auto, train, or plane -- representatives traveled between these various cities.

Data was furnished for the phone survey by Mountain States Telephone and Telegraph Company for September 15, 1967. This date was chosen at random with the sole purpose being to sample phone exchanges among Montana cities and between Montana cities and out-of-state markets. It was hoped that this data would reflect a typical day during any working week of the year. Some useful information was obtained through this survey.

First, it was found that among the six major cities in the State phone exchanges were highest between Helena and the other five cities, followed by Billings and Great Falls. It was also found that Helena was an important point for phone exchanges with the eight smaller cities in the State. Thus, on the basis of this survey, a close link is found to exist between Helena and the other cities of the State. This data is summarized on the following page.

This phone survey also showed some interesting trends for Montana's out-of-state markets. Using the regional division outlined previously, each of the six major Montana cities were carefully analyzed. Regions 1, 6, and 10 consistently ranked in the top five regions for each of these cities. Regions 7 and 2 were never found to be below sixth place. These are the same five regions which were important in the origin and destination analysis.

The major state markets of Washington, California, Wyoming, Colorado, Idaho, Utah, Oregon, and Minnesota ranked in that order, or the most important for these six cities

Table 2:11. Phone Exchanges Between City Pairs in Montana in Order of Total Importance

City	Big Six Cities	Eight Smaller Cities	Total
Helena	34,502	5,883	40,385
Billings	28,956	6,795	35,751
Great Falls	25,833	8,096	33,929
Missoula	16,325	2,115	18,440
Butte	15,625	578	16,203
Bozeman	13,271	824	14,095

combined. Washington was by far the most important single state market. However, five states to the south accounted for over 2.25 times as much traffic as the Washington market, and 1.44 times as much traffic as the Washington, Oregon, and Minnesota markets together. Thus, the southern orientation of Montana cities, consistent with the air transportation analysis, is apparent in this sample of another major medium of communication. Table 2:12 summarizes the telephone analysis for the big six cities by region and by state as discussed above.

The city business survey also provided some very useful information. Each of the eight smaller Montana cities with air service were sampled. Between 75 and 300 questionnaires were sent to the Chamber of Commerce in each of these communities for distribution to all members. With the exception of Miles City and Lewistown which returned none, between 25 and 57 percent of these questionnaires were returned. As such, the survey represents only a sample of the total business population in these communities. For a mail questionnaire, however, these percentages represent a very good return. The information obtained in this survey is summarized in Table 2:13.

The first part of the questionnaire asked for a listing of the Montana cities and the out-of-state cities important to each respondent. This listing ranked the top six cities in each case in order of importance. A simple scoring

Table 2:12. "Big Six" Telephone Analysis by Region and State

Region 1	
Arkansas	166
Colorado	6,535
Kansas	462
Louisiana	200
Missouri	1,091
Nebraska	946
New Mexico	306
Oklahoma	560
Texas	1,316
TOTAL Reg. 1	11,582
Region 2	
Iowa	849
Minnesota	4,016
North Dakota	3,275
South Dakota	2,614
Wisconsin	794
TOTAL Reg. 2	11,548
Region 3	
Kentucky	134
Illinois	2,249
Indiana	424
Michigan	703
Ohio	778
TOTAL Reg. 3	4,288
Region 4	
Alabama	196
Florida	422
Georgia	222
Mississippi	90
North Carolina	168
South Carolina	80
Tennessee	207
TOTAL Reg. 4	1,385
Region 5	
Connecticut	200
Maine	39
Massachusetts	340
New Hampshire	45
New Jersey	426
New York	1,414
Pennsylvania	631
Rhode Island	36
Vermont	26
TOTAL Reg. 5	3,157
Region 6	
Oregon	4,114
Washington	14,012
TOTAL Reg. 6	18,126
Region 7	
Arizona	991
Nevada	573
Utah	4,790
TOTAL Reg. 7	6,354
Region 8	
Idaho	5,148
Wyoming	6,884
TOTAL Reg. 8	12,032
Region 9	
Delaware	23
Maryland	212
Virginia	247
Washington D.C.	397
West Virginia	88
TOTAL Reg. 9	967
Region 10	
California	8,565

Table 2:13. Importance of Major Montana Cities and Out-Of-State Cities to Businesses in the Eight Smaller Montana Cities

In-State Market	Score	Out-of-State Market	Score
1. Billings	1,437	1. Minneapolis	921
2. Great Falls	1,318	2. Denver	492
3. Helena	775	3. Spokane	441
4. Missoula	439	4. Seattle	394
		5. Portland	207

procedure was designed to summarize the listings on a weighted basis giving top priority to the most important city.

Among Montana cities, Kalispell businessmen ranked Missoula first in importance and Great Falls second. Havre ranked Great Falls first and Billings second. Businessmen in the other four cities ranked Billings first and Great Falls second. All of the cities ranked Helena third. Taken together, they ranked Billings, Great Falls, Helena, and Missoula in that order.

Among out-of-state cities, Minneapolis was ranked first by all eight Montana cities except Kalispell. Denver was ranked second, Spokane third, Seattle fourth, and Portland fifth. Despite the ranking of Minneapolis first, these smaller Montana cities still have an overall orientation to the west and the south. The total score of these last four cities is 1.67 times as large as that of Minneapolis. The above table summarizes these rankings.

The second part of the city survey was designed to determine how travel was accomplished between the cities sampled and the important Montana markets. Available choices were: auto, auto and air, air, private air, and other. Of a total of 1460 passengers traveling between these cities and Billings, only 119 (eight percent) used air alone. An additional 394 (twenty-seven percent) used a combination of auto and air, and another twelve percent used private airplanes. Of a total of 1,279 passengers traveling between these cities and Great Falls, nine

percent used air, twenty-two percent used auto and air, and ten percent used private air. The figures for Helena were seven percent, sixteen percent, and twelve percent respectively. The major means of transportation was auto alone. This represented fifty-three percent of the number for these three cities combined.

For the complete sample of 7,051, 64.6 percent used auto, 18.9 percent used auto and air, 4.7 percent used air only, 7.7 percent used private air, and 4.1 percent used other means or a variety of combinations of means of transportation. Table 2:14 is a summary of this survey.

Table 2:14. Mode of Transportation Used by Businesses of the Eight Smaller Montana Cities to Reach Other Montana Markets

City	Auto	Auto and Air	Air	Private Air	Other	Total
Billings	646	394	119	174	127	1460
Great Falls	747	270	119	126	17	1279
Helena	437	121	50	94	60	762
Missoula	368	110	19	38	27	562
Butte	77	39	6	9	-	133
Bozeman	131	36	11	22	19	219
Other Loop Cities	1035	140	7	44	29	1255
Other Montana Cities	1113	224	3	39	2	1381
TOTAL	4554	1334	334	546	281	7051

It is apparent from the above summary that commercial air service is used very little to reach major Montana cities from these outlying communities. In fact, more trips are made by private aircraft than by scheduled commercial air service. This suggests the potential of a market served more frequently and with better scheduling, a topic discussed in Chapter 4.

The city survey also asked two other important questions. The first was intended to find out how many visits Montana based business or industry representatives made to each of the surveyed communities in 1967. The second asked the same question of out-of-state based businesses or industries. This tally is summarized in Table 2:15. It also shows a potential market for improved air service to these communities.

Table 2:15. Number of Visits by In-State and Out-of-State Business Representatives to Selected Montana Cities, 1967

City	In-State Visits	Out-of-State Visits
Glasgow	3,481	2,180
Glendive	4,645	3,046
Havre	2,512	1,685
Kalispell	2,903	2,180
Wolf Point	1,567	716
Sidney	2,079	1,357

AIR FARE ANALYSIS

Air service between Montana cities can be time consuming and inconvenient, but it is not too costly when compared with the most resorted-to alternative, the automobile. An attempt has been made to examine the ever-changing air fare structure between Montana city pairs and the results appear in Tables 2:16 and 2:17.

Data for the analysis was obtained from the Official Airline Guide. In instances where competitive air service was available between city pairs, the lowest fare was selected. Distances between the cities are in statute miles as measured from airport to airport. In order to arrive at a fare in

Table 2:16. Air Fare Expressed in Cents Per Statute Mile Between Montana City Pairs, June, 1968*

	BIL (1)	BZN (2)	BTM (3)	GTF (4)	HLN (5)	MSO (6)	GGW (7)	GDV (8)	HVR (9)	FCA (10)	LWT (11)	MLS (12)	SDY (13)	OLF (14)	WYS (15)
(1)	-														
(2)	10.2	-													
(3)	8.8	13.2	-												
(4)	8.4	15.1	9.0	-											
(5)	9.6	12.8	11.5	10.3	-										
(6)	7.5	9.3	11.8	12.5	9.8	-									
(7)	13.5	17.9	10.5	10.1	10.8	11.0	-								
(8)	9.7	10.5	9.6	11.0	10.5	9.1	22.5	-							
(9)	13.0	19.2	10.7	12.3	11.7	12.8	10.8	18.5	-						
(10)	10.2	11.6	16.4	12.2	16.3	11.3	11.4	11.5	14.5	-					
(11)	12.4	21.0	13.3	11.5	14.4	12.7	21.5	14.0	22.6	12.0	-				
(12)	11.0	11.1	9.9	10.3	10.8	9.1	25.2	14.7	17.4	11.0	15.2	-			
(13)	9.3	10.3	9.6	8.8	10.6	9.3	20.0	20.0	19.1	11.6	13.8	11.7	-		
(14)	12.1	12.8	11.8	9.4	10.2	15.1	18.0	30.4	9.5	10.7	18.7	26.1	30.0	-	
(15)	18.7	-	8.1	8.4	8.8	11.3	16.4	13.5	10.7	12.0	15.2	15.1	12.9	15.1	-

*Air fares from Official Airline Guide, and distances as measured in statute miles between airports.

cents per mile, it was assumed that interline connections were readily available when required even though in numerous instances travel by air between city pairs required considerable layover time.

From Table 2:16 it can be seen that the air fare varies from a low of 7.5 cents per mile between Billings and Missoula to a high of 30.4 cents per mile between Wolf Point and Glendive. It must be remembered, however, that the extremely high fares generally reflect a near total lack of effective air service between those city pairs.

Table 2:17 presents a weighted average fare in cents per mile, between each Montana city and all other Montana cities with commercial air service. Great Falls, Missoula, Butte, and Billings have the lowest average fares while Havre, Glasgow, and Wolf Point have the highest.

Table 2:17. Weighted Average Fare in Cents Per Statute Mile From the Following Cities to all other Montana Cities with Commercial Air Service, June, 1968*

Great Falls	- 10.3¢/mi.	Bozeman	- 12.6¢/mi.
Missoula	- 10.6¢/mi.	Lewistown	- 12.8¢/mi.
Billings	- 10.7¢/mi.	Miles City	- 12.9¢/mi.
Butte	- 10.7¢/mi.	West Yellowstone	- 13.2¢/mi.
Helena	- 11.0¢/mi.	Wolf Point	- 13.8¢/mi.
Kalispell	- 11.9¢/mi.	Glasgow	- 14.3¢/mi.
Sidney	- 12.0¢/mi.	Havre	- 14.5¢/mi.
Glendive	- 12.5¢/mi.		

*Calculations based on statute miles between airports and the lowest regular published fare, exclusive of taxes and all special fares.

With the exception of Sidney, all cities located to the east of a line drawn between Great Falls and Billings are faced with fares higher than the cities lying to the west of the Billings/Great Falls line. Two factors contribute to this striking condition. To the east of the line, one

carrier is providing single class service to small markets, while to the west, one finds competitive carrier, two class service, in substantially larger markets. Also, in every instance the lowest total fare was selected, which would tend to bias the cents per mile fare in favor of the Western Montana cities.

Seven out-of-state city pairs were selected to compare cents per mile fares with those existing in Montana, using the same method of computation. The data is presented in Table 2:18. As in Montana, the fares show wide variation. However, it becomes obvious that fares between large city markets, where competitive service exists, are low. They are higher between relatively small city markets. But, this relationship is confused by the fact that, between some city pairs, only one class of service is offered. Also, as is usually the case, whenever the distance between a city pair is a relatively small segment of a much larger route being served by a large carrier, the fare between the city pair tends to be lower.

Table 2:18. Air Fares Between Selected City Pairs in the United States, June, 1968

City Pairs	Air Fares	Airline
New York City and Washington, D. C.	7.5 cents/mile	A.A.
Fort Smith, Ark. and Little Rock, Ark.	8.8 cents/mile	B.N.
Pierre, S. D. and Huron, S. D.	9.4 cents/mile	N.O.
Bismarck, N. D. and Fargo, N. D.	9.7 cents/mile	N.W.
Oklahoma City, Okla. and Tulsa, Okla.	12.2 cents/mile	C.O.
Flagstaff, Ariz. and Phoenix, Ariz.	12.9 cents/mile	F.L.
Dodge City, Kansas and Great Bend, Kansas	13.3 cents/mile	F.L.

In conclusion, Montana fares are generally in line with fares in other regions of the country. A few Montana cities do face fares in excess of what might be considered the norm, particularly Havre, Glasgow, and Wolf Point. However, the solution to the problems of these cities is not to be found in the restructuring of existing fares along existing routes, but in a complete reexamination of service, routing, etc., which is done in Chapter 4 of this study.

COMPETITIVE FORMS OF TRANSPORTATION

Airlines are faced with three competitive modes of passenger travel: rail, motor coaches, and automobiles. However, at best none of the three pose any real threat to the airline industry. In fact, it is safe to say that in the long-haul markets the airline industry faces no effective competition. In short-haul markets, modern automobile traveling over improved highways is probably the airlines most effective competitor. This is so because in much short distance travel the only convenience enjoyed by the passenger is during the flight. Whatever time is saved through flying, as opposed to highway travel, can easily be lost at congested and unfamiliar air terminals. And, there still remains the problem and inconvenience of reaching one's final destination within the city. Furthermore, the automobile is a long accepted American institution in which most families invest vast amounts of capital, and the Federal and State governments will continue to provide improved roads for automobile travel. In the foreseeable future, automobiles will continue to carry the overwhelming proportion of American passengers, but the percentage of total passenger miles traveled by automobile will tend to decline.

Motor coaches have annually increased total passenger miles since 1960, causing them to maintain their percentage share of the total market. However, the users of air service and bus service, in the majority of cases, are vastly different consumers when the alternative forms of transportation are readily available. The purpose for travel, the time available, the ability to pay, etc. must bare heavily upon the selection of one over the other. On the basis of past performance, it is impossible to suggest that any dramatic changes will take place in the numbers of passenger-miles traveled by motor coaches.

Historically, railroads have been important to the nation's travelers. During the last 25 years, total passenger miles traveled by railroad have declined steadily, and the passenger train seems destined to rest only on the glory of its history. Whether this is by design or a product of our modern society has not been fully explored, but one can only conclude that if the railroads have not discouraged passenger travel, they certainly have done very little to encourage it. Railroad passengers stations are nothing more than monuments to history. They are generally old, in a deplorable state of repair, inadequate, unattractive, and their associated services, such as baggage handling are highly inefficient. In general it is hardly the type of service a modern traveler would choose to purchase.

Table 2:19 summarizes for selective years the volume of domestic intercity passenger traffic by type of transportation.

Airline service and schedules as they exist in Montana have been examined in detail. These schedules have also been examined at points in time throughout the historical period through which this background origin and destination history has been compiled. There have indeed been many service changes during this time period. It is also evident that even within short periods of time airline schedules tend to change.

Because of the rapid and constant changing of schedules, no complete set of airline schedules, as air service exists now in the state of Montana, has been included in this report. The following is however, a brief summary describing in general the service, market by market, as reported in the July 1, 1968 issue of the *Official Airline Guide Quick Reference, North American Edition*.

Montana is presently served by four commercial airlines and two air taxi operators. The two major trunk airlines serving Montana are Northwest and Western. The two local service carriers are Frontier and Air West, while the taxi operators are Combs Airways of Billings, Montana, and Commute Air of Spokane, Washington.

Frontier and Western operate primarily in north/south markets, although Frontier does provide some east/west service within the state of Montana and into North Dakota. In direct contrast, Northwest offers the only service to Montana in an east/west direction with the exception of two flights daily by Air West to the Kalispell area of the Washington-Montana market.

Table 2:19. Volume of Domestic Intercity Passenger Traffic, by Type of Transportation, Selected Years, 1940-1965*

	1940	1950	1960	1963	1964	1965
	Billions of Passenger-Miles					
Railroads	24.8	32.5	21.6	18.6	18.4	18.0
Motor Coaches	9.8	26.4	19.9	21.9	22.7	23.0
Automobiles	247.6	402.8	706.1	765.9	801.8	840.0
Airways	1.1	10.1	34.0	42.8	49.5	56.0
	Percent of Total					
Railroads	8.7%	6.9%	2.8%	2.2%	2.1%	1.9%
Motor Coaches	3.4%	5.6%	2.5%	2.6%	2.5%	2.5%
Automobiles	87.0%	85.2%	90.0%	89.9%	89.6%	89.4%
Airways	.4%	2.1%	4.3%	5.0%	5.5%	6.0%

*Source: *Economic Almanac, 1967-1968*; Biederman, Editor; Macmillan Company, New York, Collier-Macmillan Limited, London.

Frontier Airlines uses Convair 580 equipment on all of its flights in Montana, while Western Airlines employs all Lockheed Electra equipment. Northwest Airlines, on the other hand, flies both Lockheed Electra equipment and Boeing 727 jets. Air West uses Fairchild F-27's in their service.

Northwest Airlines indicates that it is ready and anxious to serve Montana with all Boeing 727 jet equipment as soon as the airports in Montana are capable of handling it. Western Airlines indicated that by late 1968, they would be serving all Montana cities with Boeing 737 equipment, even if this equipment had to operate under severe weight penalties. Frontier has likewise indicated an interest in operating jet equipment into some Montana airports in the near future.

The cities of Billings and Great Falls have the most frequent and highest quality service in Montana. In the summer of 1968, Billings had approximately thirty-two daily flights. These flights were provided by three carriers: Frontier, Northwest, and Western. Frontier and Northwest supplied fourteen flights each, and Western supplied four. In addition to this, Billings has an air taxi service operating between Billings and Cody and Billings and the Eastern Montana cities of Miles City, Glendive, Sidney, and Williston, North Dakota on a one-round-trip-a-day basis. Great Falls, on the other hand, was served by four carriers in the summer of 1968, with six Frontier flights, nine by Northwest, seven by Western Airlines, and two by Air West. This made a total of twenty-four flights operating daily in and out of the Great Falls terminal. The number of flights is not the only criterion to measure service. Frontier is serving Billings with more flights than Great Falls, but Western is serving Great Falls with more flights than Billings. There is, however, a significant difference in the nature of the equipment being flown by the two carriers.

The cities of Butte and Helena are both served by the two major carriers, Northwest and Western. Each of these cities has eight flights daily, four by each carrier. The Northwest flights are all east/west and Western flights are all north/south. Helena also has service from Commute Air which operates between Western Montana and Washington cities.

Bozeman and Missoula are served by Frontier and Northwest, with the flights being evenly distributed between the carriers at Bozeman. The Missoula market has two more Northwest flights than Bozeman which makes their total daily flights east/west larger than existing north/south flights provided by Frontier. All of the Frontier flights to Missoula are basically oriented to a north/south market,

while the Northwest flights are oriented toward supplying east/west service. Missoula also has four daily flights by Commute Air as a scheduled air taxi operation.

Kalispell has service from Air West on a one-round-trip-a-day frequency, one flight west and one flight east, as its only major airline service. In addition to this it has three daily flights supplied by Commute Air.

The cities of Sidney and Glendive are not now served by a commercial carrier other than Combs Airways, a scheduled air taxi operator working in connection with Frontier Airlines. It is anticipated, however, that Frontier Airlines will resume service into Sidney and Glendive when these airports are able to handle Convair 580 equipment. Miles City is served by the same daily Combs flights, in addition to two Frontier flights per day, one east and one west. The cities of Havre, Glasgow, Lewistown, and Wolf Point each have two daily Frontier flights as their only service.

The city of West Yellowstone is served by the two carriers, Western and Frontier. The Frontier service connects West Yellowstone directly with Denver, Colorado; Jackson, Wyoming; and Billings, while the Western service is oriented to Utah and California. The operation at West Yellowstone varies seasonally with Yellowstone Park tourism levels and does not function in the winter. West Yellowstone was served by approximately seven daily flights in the summer of 1968; Western providing four and Frontier providing three flights per day.

In Montana, as in the Nation, the automobile provides the airline with the highest degree of competition for both interstate and especially intrastate travel. The historical lack of effective scheduling and inadequate frequency of air service between major Montana cities has conditioned the traveling public of Montana to resort to the automobile in spite of long distances. People not only use the automobile, but also the motor coach and the train to a limited degree. However, increasing incomes, better air scheduling, great frequency, the increased value of time, and the differential convenience associated with alternative modes of transportation causes the air service to be perferred over any other.

Currently, four railroads provide passenger service in Montana. They are the Great Northern, the Northern Pacific, Union Pacific, and Chicago, Burlington, and Quincy. Two passenger trains of the Northern Pacific Railroad, the North Coast Limited and the Mainstreeter, cross Montana between Chicago and Seattle daily along the southern route. Additionally, the Northern Pacific Railroad provides two buses

daily between Logan and Garrison, one via Butte and one via Helena, to afford Helena originating passengers an opportunity to board the North Coast Limited at Butte, and Butte originating passengers an opportunity to board the Mainstreeter at Helena.

The Empire Builder and the Western Star of the Great Northern Railroad cross the state of Montana in an east/west direction twice daily along a northern route. However, the Empire Builder does not serve Great Falls. A Great Northern bus between Havre and Great Falls provides this connecting service.

The Chicago, Burlington, and Quincy Railroad provides passenger service daily between Billings and Omaha, Nebraska, while the Union Pacific Railroad provides passenger service three times a week between Butte and Los Angeles. Although no attempt has been made to quantify the volume of passengers carried by railroads in Montana, the various petitions by the railroads to the Interstate Commerce Commission for authority to suspend or reduce existing passenger service indicate that the use of the service is decreasing.

In addition to the two bus lines operated by the Northern Pacific and Great Northern Railroads, there are in Montana six motor coach lines either operating across the State or within the State. They are the Western Greyhound Lines, operating three buses daily in an east/west direction across the northern tier and the southern tier of counties; the Intermountain Transportation Company operating between Missoula and Kalispell, and Drummond and Philipsburg; the Canyon Transportation Company operating twice daily between Helena and Billings, and between Deer Lodge and Three Forks via Helena; the Neville Transit Company operating between Plentywood and Glendive; the Western Transit Company operating between Billings and Deer Lodge twice daily; and, the Yellowstone Park Line providing service between Billings and Mammouth, and Bozeman and West Yellowstone.

After an examination of the competitive structure and the services being offered by the various transportation agents, it appears that:

1. The motor coach carriers will continue to carry passengers between city points where alternative means of commercial transportation are not available. However, the likelihood that the majority of Montana originating passengers will select bus service over other transportation service is remote.

2. The automobile will continue to transport the overwhelming proportion of the American traveling public, but its share of the total will decline.

3. The railroads will continue to show a persistent decline in total passengers served.

4. Air service will continue to increase, both in total passenger miles and in percentage relative to other modes of transportation.

CHAPTER 3

TRAFFIC PROJECTIONS

TRAFFIC PROJECTIONS FOR MONTANA

The traffic projections included in the study are for 1969 - 1980, a total time span of twelve years. The projection of a variable as volatile as air passenger traffic is indeed a formidable task.

It is a task made increasingly complex by the limited availability of meaningful data. It is difficult to project twelve years into the future from only a few years of historical base. The time span used as a data base for this report is the period 1959 through 1967. However, 1959, 1960, and 1961 are not used as data points for projections primarily because of the complication introduced by a major air strike and other related factors in 1961. The historical data base for the statistical models is thus 1962 through 1967.

The 1962 to 1967 data also presented some real problems. A second major air strike was experienced throughout Montana in the third quarter of 1966, resulting in a suspected downward bias of data for that quarter. Also, the data for 1967 was incomplete at the time of publication of this report, in that no data was available for the fourth quarter of 1967. Data from both of these quarters is assumed to be missing, and the two points are estimated by a statistical procedure designed to supply missing points in a series of observed data.[5]

The Use of Statistical Models in Projections

It is fully recognized that on the basis of the short series of data that is available, it is impossible to *statistically support* projections twelve years into the future. This is true primarily because statistical procedures and their standard errors of estimates and confidence intervals on a probabilistic basis have little if any meaning beyond two to three years into the future. This is not, however, to say that statistical procedures cannot be used as guidelines to judgment projections which have to be made.

---

[5]Robert G. D. Steele and James H. Torrie, *Principles and Procedures of Statistics*, (New York, 1960), pp. 140, 141.

The projection of traffic to 1975 and 1980 on the basis of the historical data available is in fact impossible on *purely statistical grounds* because of the short series of data available as a projection base coupled with the complicated nature of variables to be considered in the projections. Professional statisticians were consulted concerning this problem and it became evident that there are no statistical tools available which allow one to project as far into the future as required here. It was concluded that the regression models used are the best tool available to make such predictions. The statistical tools are used as guide lines, and it is in no way inferred that these projections are sound from the purely statistical or probabilistic point of view. It is clear that they are not. They are simply a best estimate based on the materials available.

It is also clear that, even if one had a time series history of fifteen or twenty years, it would still be difficult to project a variable such as total origin and destination passengers by market on purely statistical grounds. This kind of a long history would help to support statistical projections on a probabilistic basis, but it would not necessarily make them realistic. Any projection procedure employed to estimate a variable such as that dealt with here requires a combination of statistical and judgment factors to ultimately arrive at a meaningful projection. In this study, statistical models have been used in combination with judgment to arrive at final upper and lower limit projections for 1969 to 1980.

Three statistical projections models were applied to each of the six major cities in Montana as well as the nine smaller cities combined. All of the models are least squares regression models which were calculated by the use of electronic computer facilities.

The first of the statistical projection models considered is a linear regression model. The linear regression model simply extends a straight line through the data points from 1962 to 1967 maintaining a minimum variance from any given point. This model assumes that traffic changed in the past at a constant, absolute number of passengers, increase or decrease, per year. This would mean that the rate of passenger increase is sharply declining and that the change in absolute number of passengers in future years is a constant. This model results in traffic projections which are extremely low, and it has been dismissed in every instance as a possible indicator of future traffic. This is due primarily to the fact that traffic increases have not followed this kind of pattern in the past, and expectations for the future do not support such a pattern. The complete results of this

projection model are therefore not included in graphic form but are shown in the table covering projections for each city. The results are not to be viewed as a meaningful projection. They are included only as background information.

The second projection model involved a quadratic regression which in every instance more accurately fit the historic data than did the linear regression. This model differs from the first in that it does not assume that the number of passengers added is a constant each year. A major identifying characteristic of the results of the quadratic regression procedure is that the rate of percentage increase per year declines while the number of passengers per year is showing considerable increase. In every instance, the quadratic regression model predicted more total traffic in the future than did the linear regression model. It is important to stress that the quadratic model does not result in an increase at an increasing rate, but it does allow for an absolute increase in the number of passengers added to the total market each year. The results of this projection model are included in the discussion of each of the individual cities, and are considered to be an accurate projection of traffic in the years immediately following 1967. It will also be used as an upper limit for the traffic projection for much of the projection period.

The third projection model is a combination of the first two. As a linear projection model, it assumes a constant annual increase in passengers. However, this model differs from the first linear model in that it uses not only data points 1962 through 1967, but also the estimated or projected traffic for 1968, 1969, and 1970 as determined by the quadratic model. It is thus a linear regression through data points 1962 to 1970, with the 1962 through 1967 points being observed ones, and the 1968 through 1970 points being the estimated ones on the quadratic regression. This projection model is used to determine the lower or minimum amount of traffic projected for the future time period for most cities.

The reason for including the second linear projection model and fitting the data to a series of points, 1962 through 1970, is that the predicted points for 1968 through 1970 are reliable estimates of the expected traffic in the various markets during those years. This is true primarily because of the excellent statistical fit of the quadratic regression model, which is reinforced by the study of traffic behavior in the past as compared to logical expectations for the years 1968 to 1970. It is clear that the traffic for 1968 through 1970, as predicted by the quadratic regression model, follows the pattern of traffic increase in these markets in the past few years.

The third model is not expected to yield as accurate a projection for the period 1968 to 1972 as would be the case with the quadratic model. As will be discussed later, this is the reason why these two models are used as a basis for the projection in these markets rather than either one singly.

The results of the three projection models are included in tabular form for each one of the cities involved. The linear regression model results, based upon the data points 1962 through 1967, are included in tabular form, but are not used as a basis for the actual city projections. The quadratic projection model results are also shown in tabular form, but are not used beyond year 1973 in the actual projection of traffic. The linear projection model results, using the data points 1962 through 1967 and the quadratic projection model points 1968 through 1970, are also included in tabular form and provide the lower limit projection in most cases. Some adjustments were made in two cities, namely Bozeman and Butte.

The upper limit projection is based on a combination of the quadratic projection model and the linear regression model, using the observed data 1962 through 1967 and quadratic estimations 1968 through 1970. This combination yields the upper limit projection as shown in both graphic and tabular form by city. The result is that the projection for 1969 through 1980 is a range and not a particular point projection. It is expected that the actual origin and destination traffic will fall within that projection range.

The graphs shown city by city are for the upper and lower limit projections described above. These projections focus on the years 1970 through 1980. Because of the way in which the projections are structured, the 1968/1969 projections could well fall slightly below or outside of the range. This is true because of the fact that the 1968, 1969, and 1970 points are assumed to fall along the quadratic line in both the lower limit and upper limit projections, making a narrow range of projection for the 1968 or 1969 years. It is expected that by 1970 these should serve as reasonable boundaries, but one should not discount the projection if in 1968 or 1969 the actual traffic falls slightly outside of this range.

Future events could prove these projections to be in error. It is impossible for anyone to project this kind of a situation with certainty. This is true primarily because there is no way to actually predict or control such variables as technology, traveling habits, airline structure and attitude, to say nothing of such items as frequency and quality of service.

The following are discussions for each of the cities of Billings, Great Falls, Helena, Missoula, Butte, and Bozeman with projections of total origin and destination traffic to 1980. This is also included for the nine smaller cities taken as a group, which are actually now eight cities since Cut Bank/Shelby no longer has service. These eight cities include the three high-line cities of Havre, Glasgow, and Wolf Point, as well as the low-line cities in Eastern Montana of Miles City, Glendive, and Sidney. The other two cities are Lewistown and Kalispell. No individual projections are included for these cities, but the projected traffic for these cities is included city by city in the section of this report which discusses the probable role of commuter or third level air carrier service to Montana.

TRAFFIC PROJECTIONS FOR BILLINGS, MONTANA

Billings has emerged as a very important air market in several respects. It is first of all a very strong and well established market as a result of being a large population center and source of considerable business activity. Billings also serves as a very important connecting point for traffic within the state of Montana as well as to bordering cities in neighboring states. This projection assumes that traffic growth in Billings will continue in the future as it has in the past.

The complete history of Billings traffic is included in Statistical Supplement No. 1, which lists traffic to various regions, total traffic, growth rates, growth rates by region, and other statistics all based on Civil Aeronautics Board data. The statistical supplement shows Billings with a total origin and destination in 1966 of 144,220 passengers. This number has been adjusted to account for the downward bias in the data due to the air strike in 1966. The third quarter traffic for 1966 was increased approximately ten thousand passengers, and the yearly total traffic for Billings was adjusted upward by seven percent, to 154,190.

The historic growth rates of air traffic in the Billings market have been relatively high and constant over the past six years. The historic growth rates of total origin and destination traffic for the period 1962 through 1967 appear on the following page.

Historic Growth Rates

1962-63	1963-64	1964-65	1965-66	1966-67	1962-67
24.7%	12.0%	15.5%	21.1%	14.7%	124.3%

These growth rates are calculated using data adjusted upward for the third quarter of 1966, due to the air strike, and estimated for the fourth quarter of 1967, due to no published data at the time of release.

In the past five years, Billings has at no time experienced a growth rate of less than twelve percent per year. Throughout most of the period the growth rate has exceeded fifteen percent. The growth rate for the entire period 1962 through 1967 is nearly 125 percent which means that the total air traffic at Billings has more than doubled in the last five years.

Table 3:1 and Figure 3:1 show the historical origin and destination traffic for Billings, Montana with projections for 1969 through 1980. Both Table 3:1 and Figure 3:1 contain a lower and an upper limit projection as explained earlier.

For 1970 the projection range varies from a lower limit of nearly 255,000 to an upper limit of nearly 268,000. This constitutes an increase of traffic in the time period 1967 through 1970 of 78,000 to 90,000 passengers. This is an increase of 26,000 to 30,000 passengers per year at an annual rate of between 12.9 and 14.8 percent. It is reasonable to assume a thirteen percent per year rate of increase in this market in view of the fact that the rate of increase per year in the three year period 1962 to 1965 was 17.3 percent per year and the annual growth rate 1964 to 1967 was 17.1 percent per year. Hence, the percentage growth rates assumed for Billings for 1967 through 1970 are significantly lower than those recorded from 1962 to 1967.

As stated earlier, it is possible, because of the way the projection models are derived, that the traffic in the time periods 1968 and 1969 could fall slightly short of what is predicted as a lower boundary. An examination of the 1968 traffic does, however, suggest that the market in 1968 is responding much as predicted. There is no Civil Aeronautics Board origin and destination material available at the time of this writing, but the actual boardings in the first half of 1968 as compared to the first half of 1967 are up 14.32 percent in Billings. If one assumes a like

Table 3:1. Historic Origin and Destination Traffic for Billings, Montana, with Projections 1969 - 1980 on the Basis of Three Projection Models

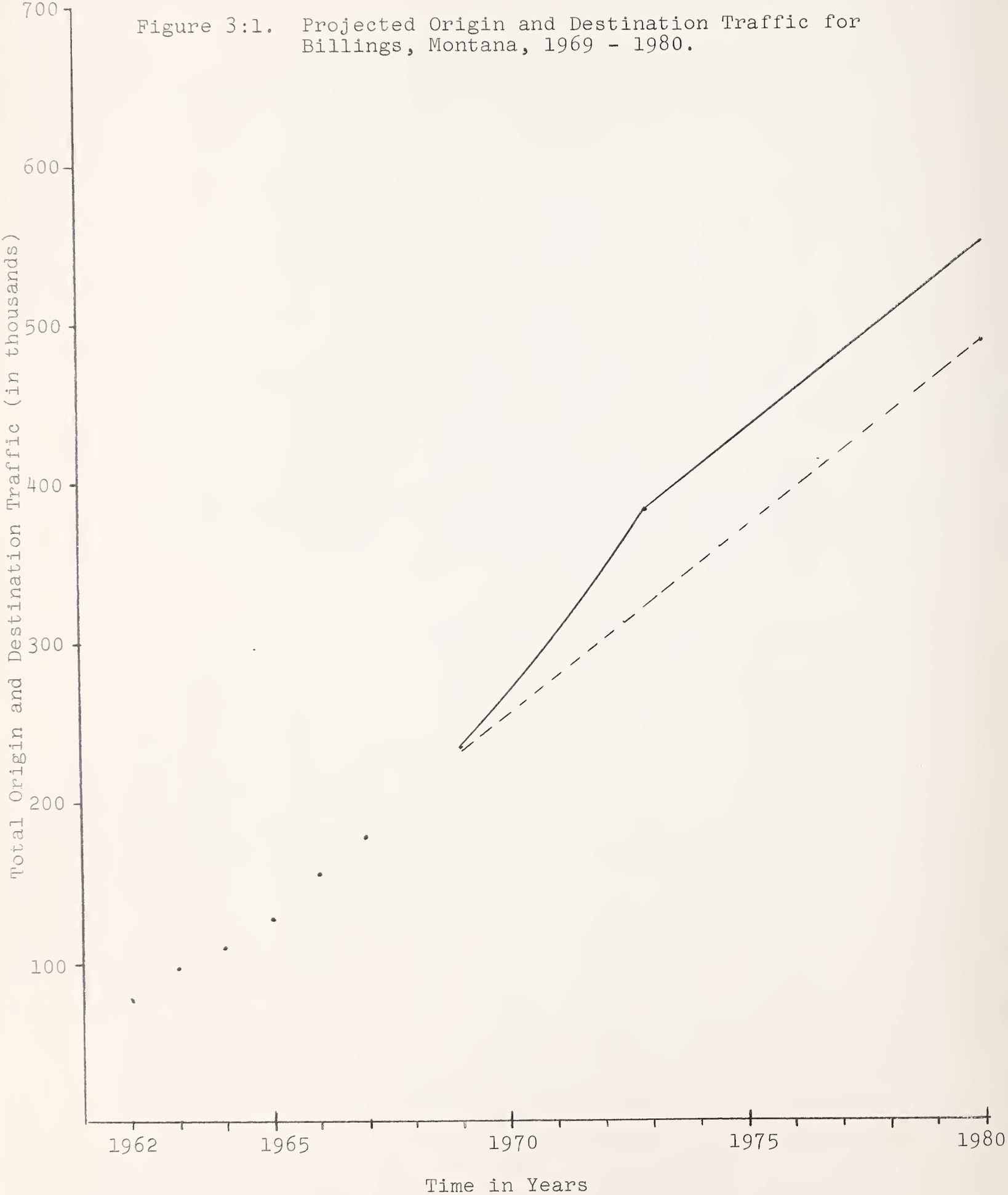
Total O & D Traffic By Year 1962 - 1967

1962	1963	1964	1965	1966	1967
78,850	98,380	110,200	127,280	154,190	176,890

Year	Projected O & D Traffic By Year 1969 - 1980		Statistical Model Results Used in Arriving at Traffic Projections		
	Lower Limit Projection	Upper Limit Projection	Quadratic Regression Fitting 1962-1967 Data Points*	Linear Regression Fitting 1962-1970 Data Points*	Linear Regression Fitting 1962-1967 Data Points*
1968	-	-	204,470	-	-
1969	231,460	234,640	234,640	231,460	211,050
1970	254,820	267,520	267,520	254,820	230,320
1971	278,180	303,130	303,130	278,180	249,600
1972	301,540	341,460	341,460	301,540	268,880
1973	324,900	382,510	382,510	324,900	288,160
1974	348,260	405,870	426,280	348,260	307,430
1975	371,620	429,230	472,780	371,620	326,710
1976	394,980	452,590	521,990	394,980	345,990
1977	418,340	475,950	573,930	418,340	365,270
1978	441,700	499,310	628,590	441,700	384,540
1979	465,060	522,670	685,970	465,060	403,820
1980	488,420	546,030	746,070	488,420	423,100

*Data points 1962-1967 taken as historic; data points 1968-1970 taken as estimated by quadratic regression fitting 1962-1967 historic data.

Figure 3:1. Projected Origin and Destination Traffic for Billings, Montana, 1969 - 1980.



increase in the last half of 1968, total 1968 traffic would be 144.32 percent of that in 1967, which is considerably more than 200,000 origin and destination passengers. This is consistent with the projection models contained herein.

The upper limit projection for 1970 to 1980 shows slightly over twice as much origin and destination traffic in 1980 as predicted for 1970. The lower limit projection, on the other hand, results in slightly less than a doubling of the traffic during the same period. During this ten year period, it is projected that traffic will increase by 23,000 to 28,000 passengers per year. The projection for a doubling of Billings traffic between 1970 and 1980 should be viewed in light of the fact that traffic more than doubled in the five year period, 1962 through 1967.

As a market develops, it tends to reach a saturation point in the sense that people are using it to their maximum needs. Growth then becomes dependent entirely upon increased demands for service by existing users as well as demands because of population and economic growth. The Billings market is not expected to reach a saturation point in the projection period, although some impact of saturation is assumed in that the rate of increase is predicted to decrease between 1970 and 1980.

The traffic forecast shows a range between upper and lower limits of 12,700 passengers, slightly less than five percent in the year 1970. This range widens to a maximum in the middle and late 1970's. By 1980 the upper projection is approximately twelve percent over the lower, resulting in a range of forecast of approximately 60,000 passengers in 1980.

TRAFFIC PROJECTIONS FOR GREAT FALLS, MONTANA

Great Falls serves Montana as an important connecting terminal for major trunk service to and from Montana. Additionally, it is a significant port of entry for international travel, making the projection and analysis of Great Falls traffic more complex than that for Billings. For analytical purposes, two traffic projections are made. The first takes into account all international traffic as a part of the total Great Falls traffic, and the second estimates Great Falls traffic independent of all international traffic.

Civil Aeronautics Board data, as reported in the *Domestic Origin - Destination Survey of Airline Passenger Traffic*, includes all Canadian traffic which enters Great Falls as a port of entry and continues on to other points in the United States as part of origination or destination traffic for Great Falls. This biases upward the total origin and destination traffic at Great Falls, and it is difficult to isolate this Canadian traffic from the recorded total. To get an accurate count, one must determine the Canadian traffic for which Great Falls is actually the origin or destination. An estimate of this traffic is possible through an examination of the Civil Aeronautics Board data for origin and destination traffic in international markets. This data, as supplied by Western Airlines, is as follows:

Great Falls Total Origin and Destination Canadian Traffic

Year	March	Sept.	Mar. & Sept.	Yearly*
1965	119	178	297	1782
1966	148	239	387	2322
1967	224	340	564	3384

Source: Supplied by Western Airlines from CAB total O & D reports on International Traffic.

*March plus September traffic multiplied by six.

By subtracting all traffic reported as a portion of an international journey from the total origin and destination traffic, one obtains an understatement of actual origin and destination traffic for Great Falls. This is true because some of this international journey traffic is actually origin and destination traffic between Great Falls and international points. Not only Canadian points are important. Other international points, such as London or Paris, to which and from which Great Falls traffic flows must be considered.

Other Montana cities are affected by in-transit international traffic. For example, from 1959 to 1966 Billings had international journey traffic of between fourteen and twenty-five percent of that reported for Great Falls. During the period 1962 through the last three quarters of 1967, international journey traffic reported in the Billings origin and destination statistics was approximately 17.5 percent of that reported for Great Falls. This figure represents traffic originating in Billings with destinations outside

the United States or traffic coming into the United States from outside and terminating in Billings.

The problem is further complicated by the fact that actual Canadian traffic to and from Great Falls does not show up at all in Great Falls domestic traffic. This Canadian traffic does show up in the domestic statistics for Billings and all other Montana cities as the completion of a portion of an international journey.

Hopefully, the above discussion does not add confusion to the picture. It is, however, important because neither of the actual traffic projection forecasts included in this report are absolutely indicative of Great Falls traffic. The projection based on total traffic including that which is a portion of international journey, is probably an overstatement of the actual traffic to be expected at Great Falls, while the projection which ignores all international portions of journey traffic is likely to be an understatement. Both projections are useful and meaningful in planning. The lower projection should be viewed as the better estimate of the actual Great Falls origin and destination traffic. A direct addition can be made to the projection to allow for Canadian-Great Falls and other Great Falls-International traffic. This is predicted to range between three and six percent of total traffic. In the planning of facilities, the international portion of journey traffic is important, but is of minimal significance to the Great Falls market as it stands by itself. International traffic reported in the Civil Aeronautics Board origin and destination statistics by year and by quarter for the Great Falls market, 1959 through 1967, is included in Table 3:2.

Table 3:3 shows the breakdown of the traffic from 1959 through 1966 which is reported as a portion of an international journey in the Great Falls origin and destination statistics. This is categorized by state and region. Comparable information for total origin and destination traffic at Great Falls is included in Statistical Supplement No. 2.

The percentage of the Great Falls traffic which has been reported as a portion of an international journey has tended to increase over time, but has stabilized in the years 1963 to 1967 at a level between eighteen and twenty-four percent of total traffic. The highest percentage was recorded in 1964 when the international journey traffic accounted for 23.6 percent of the total origin and destination traffic in Great Falls. The low year was 1967 when the figure was 18.8 percent.

Table 3:2. Total Origin and Destination Traffic Reported as a Portion of International Journey in Great Falls Origin and Destination Statistics

By Year

1959	8,970	1964	25,440
1960	8,910	1965	28,650
1961	14,730	1966	29,500*
1962	10,650	1967	32,180*
1963	18,290		

By Quarter

	1st	2nd	3rd	4th
1963			5,810	3,700
1964	5,650	6,310	7,270	6,210
1965	5,850	7,390	8,920	6,490
1966	7,580	7,500	8,810*	5,610
1967	6,230	9,080	9,690	7,180*

* As calculated using a statistical procedure for estimating missing or unusable data; Robert G. D. Steele and James H. Torrie, *Principles and Procedures of Statistics*, (New York, 1960), pp. 140, 141.

Table 3:3. Great Falls International Journey Traffic

	1959	1960	1961	1962	1963	1964	1965	1966
REGION 1								
Ark.	--	--	10	--	20	70	10	--
Colo.	960	390	2,430	2,000	2,850	3,970	4,370	2,900
Kans.	10	40	110	230	130	200	210	260
La.	10	20	80	50	160	180	280	200
Mo.	40	90	50	200	150	340	560	380
Nebr.	20	--	80	--	80	120	130	130
N. Mex.	20	30	30	180	20	130	250	210
Okla.	250	70	720	840	980	1,310	1,450	2,010
Tex.	460	890	2,350	1,740	2,890	3,660	3,630	3,430
Total	1,770	1,530	5,860	5,240	7,380	9,980	10,890	9,520
REGION 2								
Iowa	30	10	30	50	50	110	80	70
Minn.	120	200	220	170	290	530	440	480
N. Dak.	20	50	80	20	110	20	190	180
S. Dak.	--	--	40	10	70	20	180	60
Wis.	10	130	40	50	50	140	110	50
Total	180	390	410	300	570	820	1,000	840
REGION 3								
Ky.	--	--	--	--	--	20	30	10
Ill.	240	220	240	280	440	600	850	650
Ind.	10	--	20	10	10	30	110	--
Mich.	20	30	40	50	40	20	90	60
Ohio	10	100	--	20	--	100	60	80
Total	280	350	300	360	490	770	1,140	800
REGION 4								
Ala.	--	10	--	10	--	--	10	20
Fla.	40	70	60	40	50	100	40	90
Ga.	--	10	--	--	--	40	50	--
Miss.	--	--	10	--	--	20	30	40
N.C.	--	10	--	--	--	50	10	20
S.C.	--	--	10	--	--	10	--	--
Tenn.	10	20	30	--	20	--	40	--
Total	50	120	110	50	70	220	180	170
REGION 5								
Conn.	--	10	10	--	--	10	--	10
Maine	--	--	--	--	--	--	--	--
Mass.	--	20	--	--	--	30	20	20
N. H.	--	--	--	--	--	--	--	--
N. J.	--	--	--	--	--	--	--	--

Table 3:3. (cont.)

	1959	1960	1961	1962	1963	1964	1965	1966
REGION 5 (cont.)								
N. Y.	170	260	330	170	390	710	640	660
Pa.	--	40	30	70	40	20	70	20
R. I.	--	--	--	--	--	--	--	--
Vt.	--	--	--	--	--	--	--	--
Total	170	330	370	240	430	770	730	710
REGION 6								
Oreg.	190	90	120	150	370	230	250	170
Wash.	830	990	630	450	690	950	880	1,230
Total	1,020	1,080	750	600	1,060	1,180	1,130	1,400
REGION 7								
Ariz.	370	390	540	240	640	900	1,330	700
Nev.	430	780	940	620	1,090	1,780	1,660	1,730
Utah	590	340	1,010	500	980	1,530	1,880	1,590
Total	1,390	1,510	2,490	1,360	2,710	4,210	4,870	4,020
REGION 8								
Idaho	90	120	130	130	80	240	380	160
Wyo.	320	30	400	330	520	970	790	410
Total	410	150	530	460	600	1,210	1,170	570
REGION 9								
Del.	--	--	10	--	--	--	--	--
Md.	--	--	--	10	--	--	40	10
Va.	--	--	--	--	--	--	--	--
Wash, D.C.	30	80	20	40	30	30	50	60
W. Va.	--	--	--	--	--	--	--	--
Total	30	80	30	50	30	30	90	70
REGION 10								
Calif.	2,940	2,980	2,670	1,410	3,130	4,090	5,410	7,440
IN-STATE	730	390	1,210	580	1,920	2,160	2,040	1,240

*Source: C.A.B. Origin and Destination Statistics, Portion of International Journey, sample expanded by a factor of 10.

Traffic Projections for Great Falls Including All Portions of International Journey.

The projections for Great Falls with international journey traffic included are contained in Table 3:4 and Figure 3:2. The following historic growth rates have prevailed in this Great Falls market:

Historic Growth Rates

1962-63	1963-64	1964-65	1965-66	1966-67	1962-67
17.6%	12.5%	18.9%	21.0%	10.3%	109.9%

These growth rates are calculated using data adjusted upward for the third quarter of 1966, due to the air strike, and estimated data for the fourth quarter of 1967, due to the unavailability of published data at the time of this study.

The Great Falls market has experienced over a doubling of traffic from 1962 to 1967. The lowest year, in terms of percentage growth, was 1966-1967 when traffic grew by ten percent. The highest period was 1965-1966 when a growth of twenty-one percent was recorded.

The three year growth rates, 1962-1965, when compared with a similar three year period, 1964-1967, are nearly constant. The average annual increase for the years 1962 through 1965 was 16.3 percent, while that increase for the years 1964 through 1967 was 16.6 percent per year. The projection in Table 3:4 and Figure 3:2 shows an annual rate of increase for the years 1967 through 1970 of 14.7 percent per year for the upper limit and 13.0 percent per year for the lower limit, a reduction in the growth rate as compared to comparable historic three year periods.

All of these projections are based on a new or adjusted traffic total for the third quarter of 1966 of 44,730, ten thousand above its actual level of 34,660. This adjustment, a 29.1 percent increase, was made because of the downward bias caused by the air strike in the third quarter of 1966. This raised the Great Falls traffic in 1966 to 155,050, or up 6.9 percent from that reported by the Civil Aeronautics Board.

A significant leveling off, in terms of traffic growth on a percentage basis, has been projected for the period 1970 to 1980. The lower limit projection, 1970 to 1980,

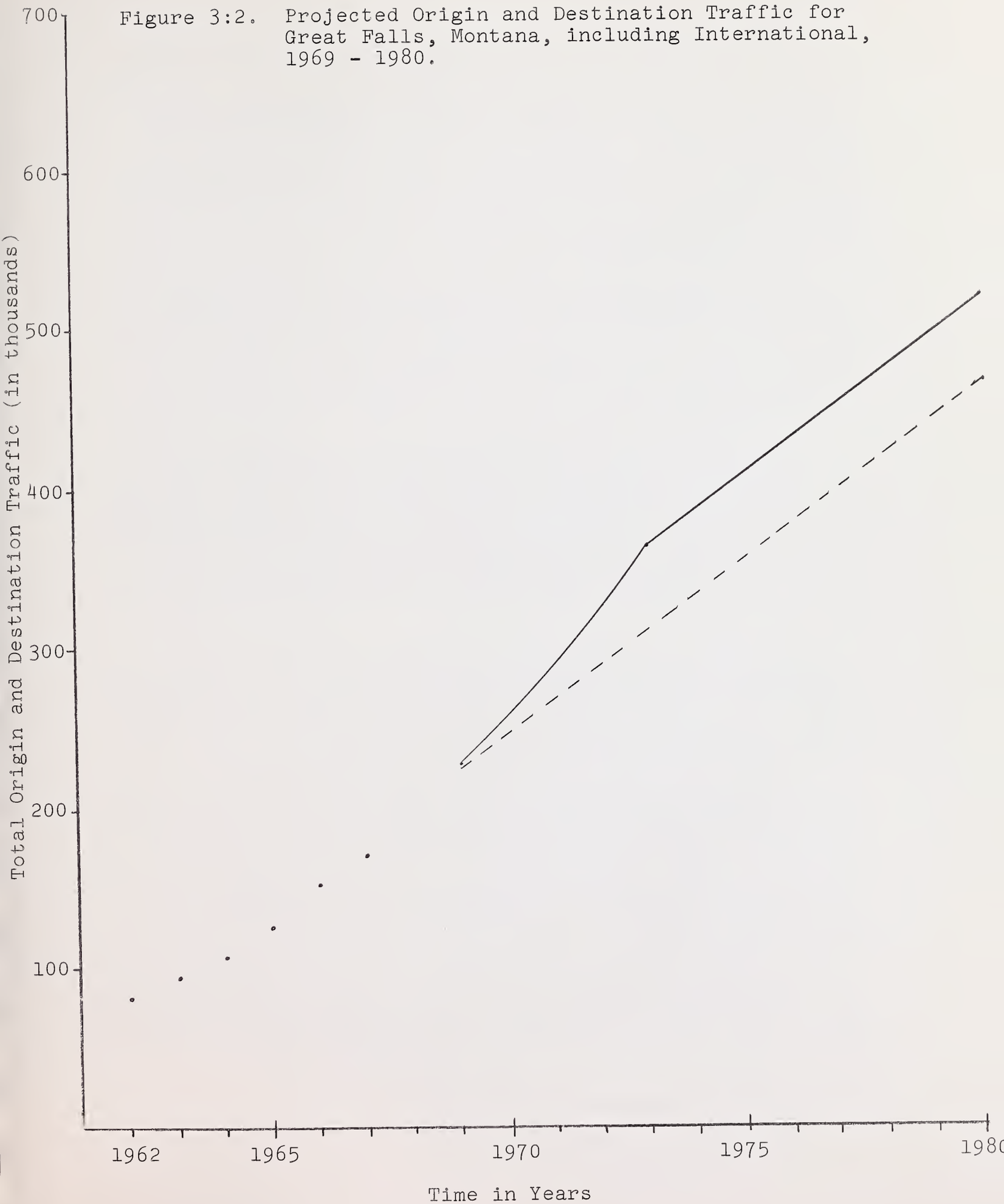
Table 3:4. Historic Origin and Destination Traffic for Great Falls, Montana, Including All Traffic Reported as Completing International Journey with Projections 1969 - 1980 on the Basis of Three Projection Models

Total O & D Traffic By Year 1962 - 1967					
1962	1963	1964	1965	1966	1967
81,480	95,780	107,720	128,130	155,050	170,990

Year	Projected O & D Traffic By Year 1969 - 1980		Statistical Model Results Used in Arriving at Traffic Projections		
	Lower Limit Projection	Upper Limit Projection	Quadratic Regression Fitting 1962-1967 Data Points*	Linear Regression Fitting 1962-1970 Data Points*	Linear Regression Fitting 1962-1967 Data Points*
1968	-	-	199,120	-	-
1969	224,460	227,300	227,300	224,460	206,220
1970	246,560	257,920	257,920	246,560	224,670
1971	268,660	290,970	290,970	268,660	243,120
1972	290,760	326,450	326,450	290,760	261,570
1973	312,860	364,360	364,360	312,860	280,020
1974	334,960	386,460	404,710	334,960	298,470
1975	357,060	408,560	447,490	357,060	316,920
1976	379,160	430,660	492,700	379,160	335,370
1977	401,260	452,760	540,350	401,260	353,820
1978	423,360	474,860	590,430	423,360	372,270
1979	445,460	496,960	642,940	445,460	390,730
1980	467,560	519,060	697,880	467,560	409,170

*Data points 1962-1967 taken as historic; data points 1968-1970 taken as estimated by quadratic regression fitting 1962-1967 historic data.

Figure 3:2. Projected Origin and Destination Traffic for Great Falls, Montana, including International, 1969 - 1980.



shows that traffic will less than double in that ten year period. The historic growth rates, however, show that the Great Falls traffic more than doubled in the five year period, 1962 to 1967. This projected growth in the 1970 to 1980 period amounts to an average annual increase of between 22,000 and 26,000 origin and destination passengers. The leveling off in terms of growth rate is further emphasized by the fact that the growth projected for 1979 to 1980 is less than five percent, compared to historic growth rates of ten to twenty percent.

The range in projections for 1970 is approximately eleven thousand passengers, or a difference of slightly under five percent. The range is widened by 1980 to 51,500 passengers, a difference of eleven percent. This is a narrow range between upper and lower limit projections in that historically traffic has changed in one year by more than eleven percent.

Indications are that the traffic in Great Falls, including international journey traffic, for the first part of 1968 has continued its strong growth. The boardings reported at Great Falls for the period January through June of 1968 show a 14.4 percent increase over the comparable period of 1967. This is entirely consistent with the thirteen to fifteen percent growth rates projected for the 1967 to 1970 period.

Traffic Projections for Great Falls, Montana, Excluding All Portions of International Journey.

The traffic projections for Great Falls excluding all international journey traffic are based entirely upon Civil Aeronautics Board origin and destination statistics. No attempt has been made to add back in that portion of international journey traffic which actually used Great Falls as an originating or terminating point. As stated earlier, this traffic is expected to add three to six percent to these projections.

The average annual growth rates in the Great Falls market, excluding international journey traffic, have shown considerable variation. These growth rates were as shown on the following page.

Historic Growth Rates

1962-63	1963-64	1964-65	1965-66	1966-67	1962-67
9.4%	6.2%	20.9%	26.2%	10.6%	96.0%

These rates ranged from twenty to twenty-five percent in the period 1964 to 1966 and were between six and ten percent in the period 1962 to 1964. Again, growth rates are calculated using data adjusted upward for the third quarter of 1966, due to the air strike, and estimated for the fourth quarter of 1967, due to the unavailability of published data at time of this study.

The average annual growth rate for the years 1962 to 1964 was twelve percent and for the years 1964 to 1967 was nineteen percent. The projection model results in an average annual increase for the years 1967 to 1970 of 15.9 to 19.3 percent. Because of the higher degree of variation in this particular data, the upper limit projections are changed slightly from those for Great Falls including international journey traffic. The change is that the quadratic projection is assumed to be the upper limit through 1973 in one case, and through 1972 in the other. This difference can clearly be noted in Table 3:5 and Figure 3:3.

Total traffic is projected to approximately double in the period 1970 to 1980 while, as in Billings, it nearly doubled in the five year period, 1962 to 1967. The range between upper and lower limit projections for 1970 is 19,000 passengers, a difference of 9.1 percent. The range between projections for 1980 is nearly 62,000 passengers, a difference of 14.7 percent. The percentage increases projected for the end of the period, 1970 to 1980, are approximately five percent, a decline in percentage increase similar to that projected for Great Falls including international journey traffic.

In summary, it is advisable to consider both projections discussed above. Great Falls is expected to continue to play an important role as a major air terminal in Montana. The projections which include international journey could be strongly influenced by changes in airline routes or the designations of other ports of entry for Canadian traffic. The projection model contained here assumed a static situation relative to these matters.

Table 3:5. Historic Origin and Destination Traffic for Great Falls, Montana, with Projections 1969 - 1980 on the Basis of Three Projection Models (All International Portion of Journey Removed)

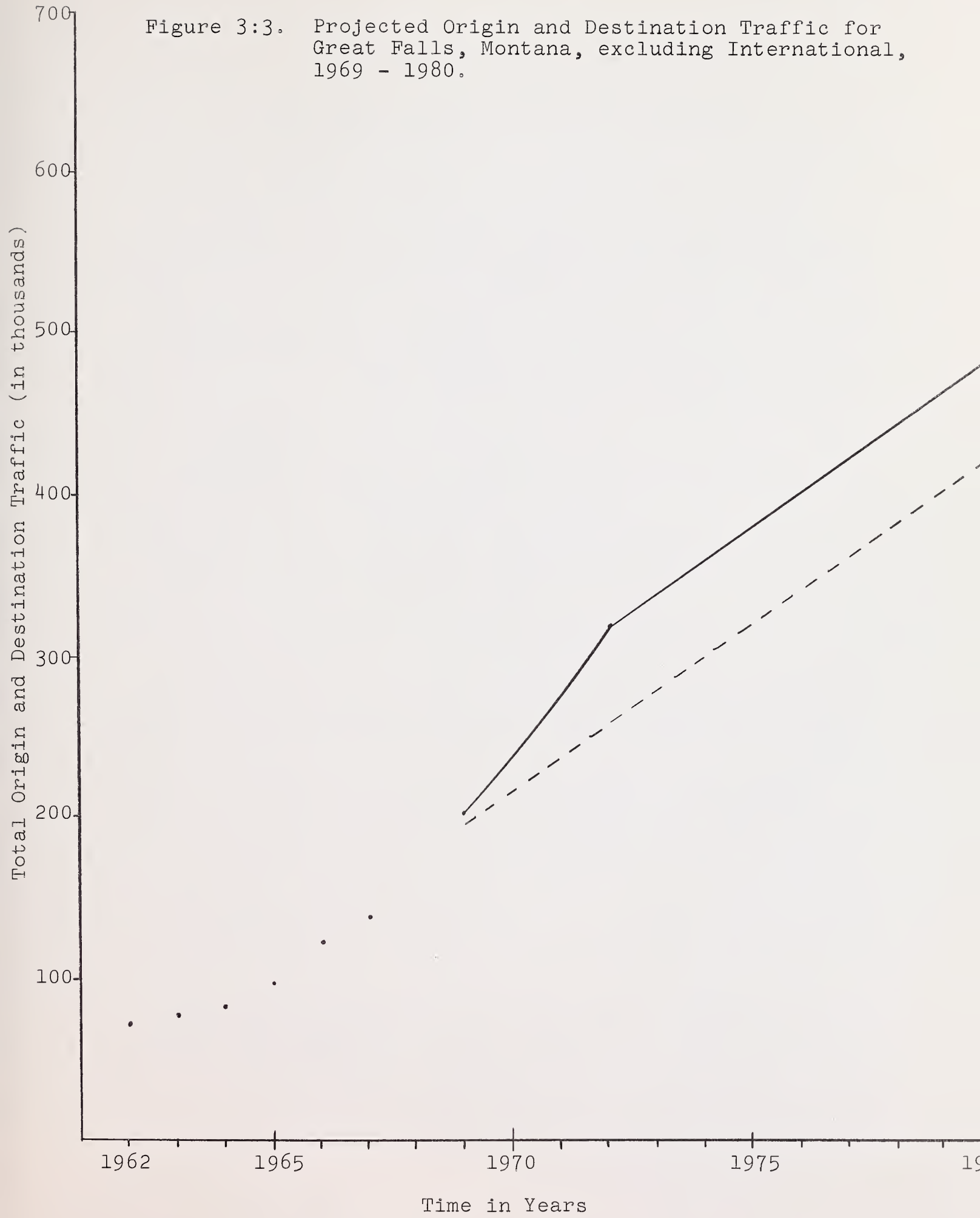
Total O & D Traffic By Year 1962 - 1967

1962	1963	1964	1965	1966	1967
70,830	77,490	82,280	99,480	125,550	138,810

Year	Projected O & D Traffic By Year 1969 - 1980		Statistical Model Results Used in Arriving at Traffic Projections		
	Lower Limit Projection	Upper Limit Projection	Quadratic Regression Fitting 1962-1967 Data Points*	Linear Regression Fitting 1962-1970 Data Points*	Linear Regression Fitting 1962-1967 Data Points*
1968	-	-	168,880	-	-
1969	195,170	200,090	200,090	195,170	163,520
1970	215,820	235,500	235,500	215,820	177,850
1971	236,470	275,130	275,130	236,470	192,170
1972	257,120	318,990	318,990	257,120	206,490
1973	277,770	339,640	367,060	277,770	220,810
1974	298,420	360,290	419,350	298,420	235,140
1975	319,070	380,940	475,860	319,070	249,460
1976	339,720	401,590	536,580	339,720	263,780
1977	360,370	422,240	601,530	360,370	278,100
1978	381,020	422,890	670,690	381,020	292,420
1979	401,670	463,540	744,080	401,670	306,750
1980	422,320	484,190	821,680	422,320	321,070

*Data points 1962-1967 taken as historic; data points 1968-1970 taken as estimated by quadratic regression fitting 1962-1967 historic data.

Figure 3:3. Projected Origin and Destination Traffic for Great Falls, Montana, excluding International, 1969 - 1980.



TRAFFIC PROJECTIONS FOR HELENA, MONTANA

The Helena market has been historically strong and steadily expanding. It is strong in the sense that it is a self-generator of traffic and an important destination for incoming traffic to Montana because of the State Capitol. As stressed in other sections of this report, Helena also has a vital role to play in terms of the intrastate movement of traffic in Montana. This again is primarily due to the fact that state government operations for the entire state of Montana center largely in Helena.

The historic growth rates for the Helena market, which appear below, have been relatively stable and high.

Historic Growth Rates

1962-63	1963-64	1964-65	1965-66	1966-67	1962-67
23.5%	12.3%	27.3%	27.8%	21.6%	174.3%

The growth rate has been over twenty percent per year in four of the five years listed, with an annual growth rate of over twenty-seven percent in the period 1964-1965 and again in 1965-1966. The Helena traffic in 1967 was approximately 2.75 times that of 1962, an outstanding growth record.

From 1962 to 1965 the Helena market showed an annual increase of 21.0 percent as compared to 25.5 percent per year for the three year period 1964-1967. The models used to project Helena traffic showed an annual increase in traffic ranging between 17.8 and 21.5 percent for the three year period, 1967 to 1970. These projections are shown in Table 3:6 and Figure 3:4. The growth rates projected for the 1967-1970 period are indeed high, but much lower than historic growth rates.

The Helena projections, as with other cities, have been based on an adjusted total origin and destination traffic for 1966. The third quarter traffic for 1966 was adjusted upward from 4400 to 6240, increasing yearly traffic to 23,660. This is an increase of 8.4 percent over the 1966 total shown in the Civil Aeronautics Board origin and destination statistics and included in Statistical Supplement No. 1.

Between 1970 and 1980 traffic is projected to more than double according to the lower limit projection and to increase 2.3 times according to the upper limit projection. Although significant increases, they are much less than growth for a five year period in the past. The growth rate projected for 1979 to 1980 is approximately five percent as compared to historic yearly changes of well over twenty percent.

The projection range for the Helena market is 4560 passengers in 1970, which is a variation from lower to upper bounds of 9.7 percent. The range in 1980 is over 20,000 passengers, a difference of slightly over twenty-one percent.

The average annual passenger increase projected for the 1970 to 1980 period is approximately 6000 passengers per year, The average annual increase in passengers for the 1967 to 1970 period is projected to be approximately 6800 passengers.

The flow of traffic in Helena during the first half of 1968 clearly indicates that the strong and extremely high growth rate in this market is persisting.. Total on and off traffic in Helena during the first six months of 1968 shows a 26.5 percent increase over a comparable period in 1967, a growth rate well above the annual rates of 17.8 and 21.5 percent calculated for the period 1967 to 1970. These high growth rates notwithstanding, it seems unlikely that Helena is rapidly approaching a market saturation point.

If, a strong intrastate traffic pattern should develop, these Helena projections could fall far short of the actual market. There is unquestionably a vast undeveloped market of potential intrastate travel to and from Helena, a subject discussed in other sections of this report. If this potential market is developed sometime during the projection period, it should be expected that these forecasts for Helena traffic will be grossly underestimated.

Table 3:6. Historic Origin and Destination Traffic for Helena, Montana, with Projections 1969 - 1980 on the Basis of Three Projection Models

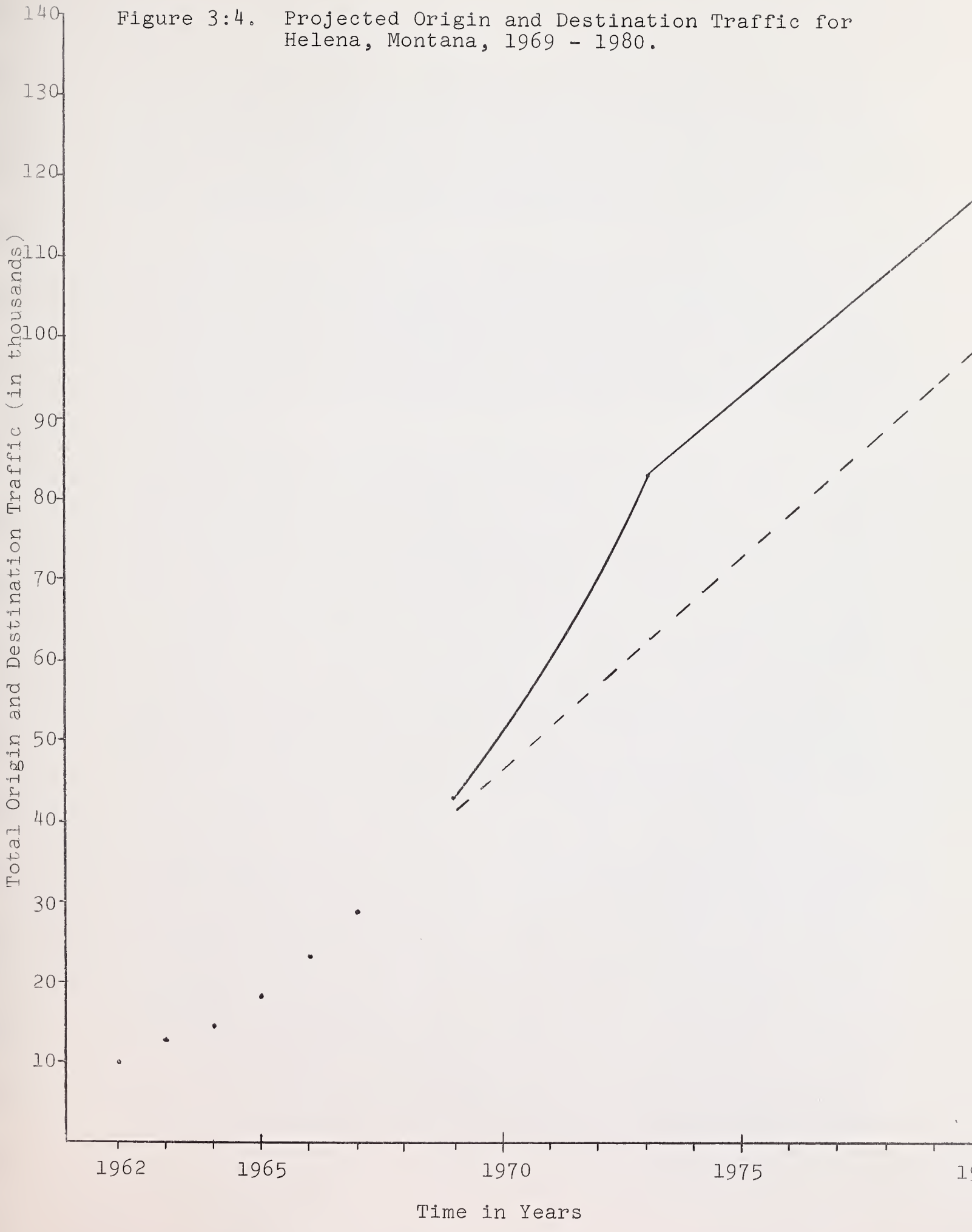
Total O & D Traffic By Year 1962 - 1967

1962	1963	1964	1965	1966	1967
10,490	12,960	14,550	18,520	23,660	28,770

Year	Projected O & D Traffic By Year 1969 - 1980		Statistical Model Results Used in Arriving at Traffic Projections		
	Lower Limit Projection	Upper Limit Projection	Quadratic Regression Fitting 1962-1967 Data Points*	Linear Regression Fitting 1962-1970 Data Points*	Linear Regression Fitting 1962-1967 Data Points*
1968	-	-	35,470	-	-
1969	41,890	43,030	43,030	41,890	34,550
1970	47,000	51,560	51,560	47,000	38,190
1971	52,100	61,080	61,080	52,100	41,830
1972	57,220	71,570	71,570	57,220	45,470
1973	62,320	83,040	83,040	62,320	49,120
1974	67,430	88,150	95,490	67,430	52,760
1975	72,540	93,260	108,910	72,540	56,400
1976	77,650	98,370	123,320	77,650	60,040
1977	82,760	103,480	138,710	82,760	63,680
1978	87,870	108,590	155,070	87,870	67,320
1979	92,980	113,700	172,410	92,980	70,970
1980	98,090	118,810	190,730	98,090	74,610

*Data points 1962-1967 taken as historic; data points 1968-1970 taken as estimated by quadratic regression fitting 1962-1967 historic data.

Figure 3:4. Projected Origin and Destination Traffic for Helena, Montana, 1969 - 1980.



THE RELATIONSHIP OF THE WESTERN MONTANA SERVICE INVESTIGATION CASE TO TRAFFIC PROJECTIONS AND FORECASTS FOR BOZEMAN, MISSOULA, AND BUTTE

The Western Montana Service Investigation Case of 1966-1967 had an extremely significant impact upon the traffic patterns serving Bozeman, Missoula, and to some extent, Butte. As a result of this Case, Bozeman and Missoula received significant increases in service, including north/south service for the first time for both cities.

Prior to the beginning of the Case, Bozeman had two flights per day in an east/west direction as its only air service. As a direct result of the Case, Bozeman received four additional flights per day by Frontier Airlines. These are all north/south flights with some east/west service within the state of Montana. At almost the same time, Northwest Airlines announced the addition of two more east/west flights daily to Bozeman. Thus, Bozeman service increased from two flights per day to eight in the short span of a few months.

Missoula had four flights in an east/west direction prior to this Case and received four additional flights as a direct result of the Case. These flights are north/south, with some east/west connections in Montana, resulting in significantly improved service for Missoula.

Butte, on the other hand, was not directly involved in the Case at all. Its traffic patterns have, nevertheless, been altered as a result of it because of the changes in the Missoula and Bozeman situations. It was clearly established that there was a significant amount of driving from Bozeman and Missoula to board flights in Butte for travel in a north/south direction. Bozeman Exhibit 905, as contained in the Direct Exhibits of the city of Bozeman and the Bozeman Chamber of Commerce, showed that for every one hundred tickets sold for boarding in Bozeman there were forty-one sold for boarding in Butte and West Yellowstone, with the overwhelming majority of these being in Butte. Many other examples of the driving to Butte from Missoula and Bozeman to board north/south flights were cited in this Case. This partially accounts for the fact that Butte had

over seventy percent of its 1962-1966 passengers on north/south flights. This compares to a State average of 47.5 percent east/west and 52.6 percent north/south during the same period. Bozeman and Missoula, on the other hand, had 81.6 and 76.9 percent east/west flights. Obviously, Butte traffic was heavily biased upward in a north/south direction, and Missoula and Bozeman traffic biased upward in an east/west direction because of existing service patterns.

There is no doubt but that these statistics will change significantly in the next few years as a result of north/south service to Bozeman and Missoula. Bozeman and Missoula will show increasing percentages of traffic flowing north/south while Butte traffic will be spread more evenly between north/south and east/west than has been the case in the past. The projections in the following three sections concerning Bozeman, Missoula, and Butte are made considering these factors.

TRAFFIC PROJECTIONS FOR BOZEMAN, MONTANA

The Bozeman market traffic projection is exceedingly complex. This is true primarily because Bozeman moved, in the past year, from having two flights to eight flights per day. In addition, Bozeman has received direct north/south routings to Great Falls, Salt Lake City, and Denver. These and other developments in 1968 will undoubtedly cause traffic to increase significantly faster than in past years. Therefore, one cannot project the Bozeman traffic with the same methodology which has been applied to other markets.

As before, the 1966 traffic is adjusted upward because of the air strike in the third quarter of 1966. The estimated traffic for the third quarter of 1966 is 4210, resulting in an increase for 1966 from 10,350, as reported by the Civil Aeronautics Board, to 12,980.

Growth rates for Bozeman from 1962 to 1967 were as follows:

Historic Growth Rates

1962-63	1963-64	1964-65	1965-66	1966-67	1962-67
9.2%	24.9%	59.9%	34.0%	24.7%	264.5%

The 1967 traffic total for Bozeman is an estimate, based on the actual traffic recorded by the Civil Aeronautic Board for the first three quarters of 1967 and a missing data procedure which relates comparative quarterly totals from previous years to known totals for 1967. There is no attempt to adjust traffic totals to account for the introduction of Frontier Airlines into the Bozeman market in the last quarter of 1967.

The linear projection model, which uses the data points 1962 to 1967 as observed and the data points 1968 through 1970 as estimated by the quadratic regression, is the only projection model actually used in the Bozeman traffic forecast. This linear projection model resulted in a traffic forecast of 22,490 passengers for 1968, an average annual increase of 3675 passengers.

Boardings of Northwest flights during the first half of 1968 in Bozeman have not decreased as a result of the entry of Frontier Airlines into the market as has been the case at Missoula. Boardings from January through June of 1968 have, in fact, increased on Northwest flights while, at the same time, there have been a large number of boardings on the new Frontier service. The result is that total boardings in the January through June period of 1968 are up 120.8 percent over the corresponding period of 1967. One can estimate total Bozeman traffic for 1968 by taking the total origin and destination traffic in 1967 (16,190 passengers) and assuming that total 1968 traffic will be 220.8 percent of 1967 traffic, as has been the case during the first six months of 1968. This suggests that Bozeman may have total origin and destination traffic of over 35,000 in 1968.

The procedure used to define a lower limit projection for Bozeman shows a minimum traffic level for 1968 of 32,490 which is exactly 10,000 passengers more than the projection which results from the linear regression model using 1962 to 1970 data. The remainder of the lower limit is then determined by adding 3675 passengers per year throughout the period 1968 through 1980, which is the annual increase derived from the linear regression model. Table 3:7 and Figure 3:5 show this lower limit projection for the Bozeman market which is believed to be much lower then one should expect due to the recent changes in service.

There is no way to use the historic data as a basis for projecting an upper limit for Bozeman traffic. Therefore, an approach entirely different from that used for the other cities has been chosen. The upper limit projection for Bozeman is assumed to be exactly equal to the upper limit projection for Helena.

This assumption is based on a variety of factors. First, if one examines the traffic from Helena and Bozeman to Regions 2, 3, 4, 5, 6, and 9, one sees that the two markets have become increasingly similar in recent years. All of the data for this comparison is found in Statistical Supplement No. 1. During the years 1962-1963, the Helena traffic to these six regions was 182 to 200 percent of that of Bozeman. However, in 1965-1966, this difference had narrowed to between 30 and 38 percent. It should also be noted that during this period, 1962-1966, Helena had more service available to these east/west markets than did Bozeman. However, as stated earlier, Bozeman now has service comparable to Helena in terms of reaching these east/west markets. Both Helena and Bozeman are served by the same airline using the same equipment with the same frequency. It is anticipated that, with identical service to both communities, these markets will become even more similar in the years 1968, 1969, and 1970.

There are other indications to support the assumption that the Bozeman and Helena markets are approximately equal. The traffic to Helena during January through June of 1968 showed a 26.5 percent increase over 1967. By applying an assumed growth in Helena traffic of 26.5 percent for the entire year to the 1967 Helena total origin and destination traffic, one arrives at an estimated 36,400 total origin and destination passengers in 1968. Similarly, assuming constant growth in the last half of 1968, Bozeman traffic could reach the 35,750 mark for the year. It should also be noted that Bozeman has not had north/south service or east/west service comparable to Helena's for a long enough period to fully develop the Bozeman market. Airlines have argued in various route cases that it takes at least a year to fully develop a market, precisely the position taken by Frontier Airlines in the Western Montana Service Investigation Case. It seems likely that the Bozeman market is not yet taking full advantage of the improved service.

Another factor which suggests the similarity of the Helena and Bozeman markets is that they are similar trade areas. Both trade areas have comparable populations, and the economic climates of the two are not vastly different. The Helena economy is based in large part on the functions of State government, which the Bozeman economy relies heavily on a state institution, the land-grant university. The resultant interests of the two communities and their ties with other cities both in-state and out-of-state are similar.

On the strength of these and other associated arguments, it is assumed that the upper limit projection estimated for Helena will serve as a reasonable upper limit projection for the Bozeman market 1968 to 1970. The compelling reason

Table 3:7. Historic Origin and Destination Traffic for Bozeman, Montana, with Projections 1968 - 1980 on the Basis of Three Projection Models

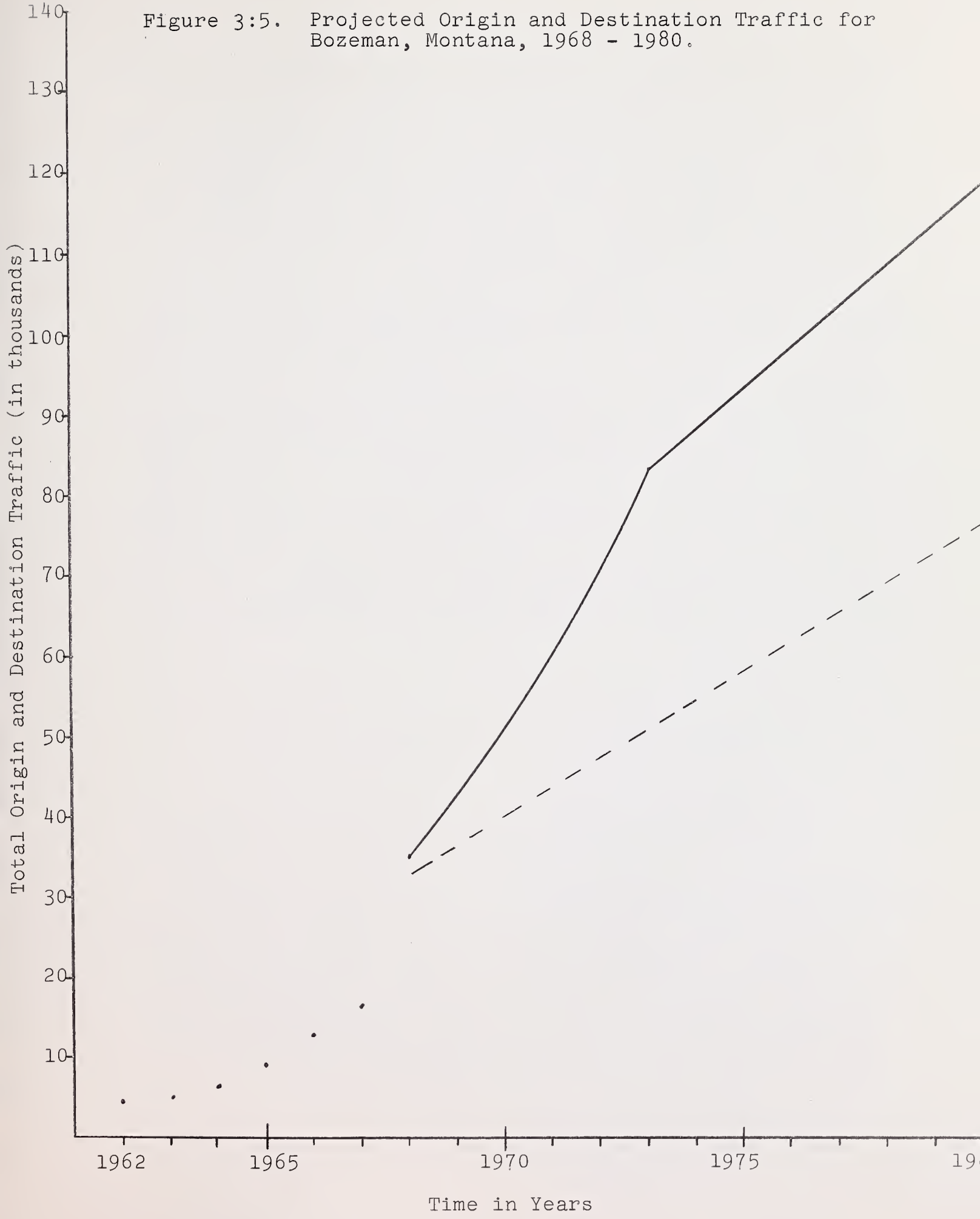
Total O & D Traffic By Year 1962 - 1967

1962	1963	1964	1965	1966	1967
4,440	4,850	6,060	9,690	12,980	16,190

Year	Projected O & D Traffic By Year 1968 - 1980		Statistical Model Results Used in Arriving at Traffic Projections		
	Lower Limit Projection	Upper Limit Projection	Quadratic Regression Fitting 1962-1967 Data Points*	Linear Regression Fitting 1962-1970 Data Points*	Linear Regression Fitting 1962-1967 Data Points*
1968	32,490	35,470	21,430	22,490	17,710
1969	36,170	43,030	27,100	26,170	20,190
1970	39,840	51,560	33,560	29,840	22,670
1971	43,520	61,080	40,830	33,520	25,150
1972	47,190	71,570	48,880	37,190	27,630
1973	50,870	83,040	57,740	40,870	30,110
1974	54,540	88,150	67,390	44,540	32,590
1975	58,220	93,260	77,840	48,220	35,070
1976	61,890	98,370	89,100	51,890	37,550
1977	65,560	103,480	101,140	55,560	40,020
1978	69,240	108,590	113,980	59,240	42,500
1979	72,910	113,700	127,620	62,910	44,980
1980	76,590	118,810	142,060	66,590	47,46-

*Data points 1962-1967 taken as historic; data points 1968-1970 taken as estimated by quadratic regression fitting 1962-1967 historic data.

Figure 3:5. Projected Origin and Destination Traffic for Bozeman, Montana, 1968 - 1980.



for using this Helena projection, rather than synthetically manufacturing one for Bozeman, is that if Helena and Bozeman are directly comparable in terms of size as air markets, it is more reasonable to derive an upper limit projection based on the market where service has been available rather than on the market where the service was only recently initiated. Helena has historically had service comparable to what Bozeman now has, and both Helena and Bozeman have responded similarly to market developments. Table 3:7 and Figure 3:5 show upper and lower limit projections and the results of the statistical models.

The resulting range of projections is significantly wider than for other city markets. The range of projections is nearly 12,000 passengers or thirty percent in 1970 and 42,000 passengers in 1980, a difference of fifty-five percent. Admittedly, this is a wide projection range, but such a range is necessary because of the complicating nature of the data. If greater specificity is required, it is believed that the upper limit projection is more reliable than is the lower limit projection.

The traffic forecasting model used for Bozeman projects that traffic will approximately double between 1970 and 1980. This compares to a more than doubling of the traffic during the five year period 1962 to 1967 and another doubling during 1968 because of significant service changes.

TRAFFIC PROJECTIONS FOR MISSOULA, MONTANA

The Missoula market has been extremely interesting in the past. As with all other cities, traffic for the third quarter of 1966 is adjusted upward to account for the air strike experienced in that quarter. The number of passengers assumed realistic for the third quarter of 1966 is 13,900 instead of the 7,560 reported for that quarter in the Civil Aeronautics Board origin and destination statistics. The 1966 total traffic for Missoula is thus estimated to be 46,400, up 15.8 percent from the 40,060 reported by the Civil Aeronautics Board and included in Statistical Supplement No. 1, along with other pertinent data relative to the Missoula market.

The historic growth rates for Missoula are as follows:

Historic Growth Rates

1962-63	1963-64	1964-65	1965-66	1966-67	1962-67
16.4%	24.1%	31.2%	34.6%	26.8%	223.3%

These growth rates are extremely high, being over twenty-six percent per year in each of the last three years, twice exceeding thirty percent. This results in a very high growth rate for the five year period, 1962-1967, making 1967 traffic 3.23 times that of 1962.

These growth rates have taken place during a time when no direct north/south service was available and east/west service was being supplied by a single carrier with only four frequencies per day. An examination of the growth rates for 1962 to 1965 shows an average annual rate of growth in that period of 23.7 percent. The corresponding yearly increase from 1964 to 1967 was over thirty percent.

Table 3:8 and Figure 3:6 both show a range of projections for Missoula from 1969 to 1980. Much thought and study was devoted to consideration of the possibility of adjusting the Missoula traffic upward for 1968, because of the new service being provided. An examination of the flight records in 1968 shows that in every month, January through June, the boardings of Northwest Airlines at Missoula have declined. This is probably an indication of a decrease in demand for east/west flights formerly used to connect with north/south flights. There has been a large increase in total boardings as a direct consequence of the introduction of Frontier Airlines into this market. The total boardings for the first half of 1968 show a 28.26 percent increase over a corresponding period in 1967.

The projections based on historical data show an average annual increase in the period 1967 to 1970 of 20.6 to 25.3 percent. It is believed that these rates are high enough to account for the expected sharp increases in 1968 and 1969 which will result from the addition of north/south service and a doubling of the total frequency of service in Missoula. Actual increases between 1967 and 1970 may well be higher than those predicted. However, it is believed that the projection range specified for 1970 to 1980 is reasonable without the inclusion of a sharp adjustment upward in 1968.

Projections for 1970 to 1980 indicate that traffic will more than double, following either the lower limit

Table 3:8. Historic Origin and Destination Traffic for Missoula, Montana, with Projections 1969 - 1980 on the Basis of Three Projection Models

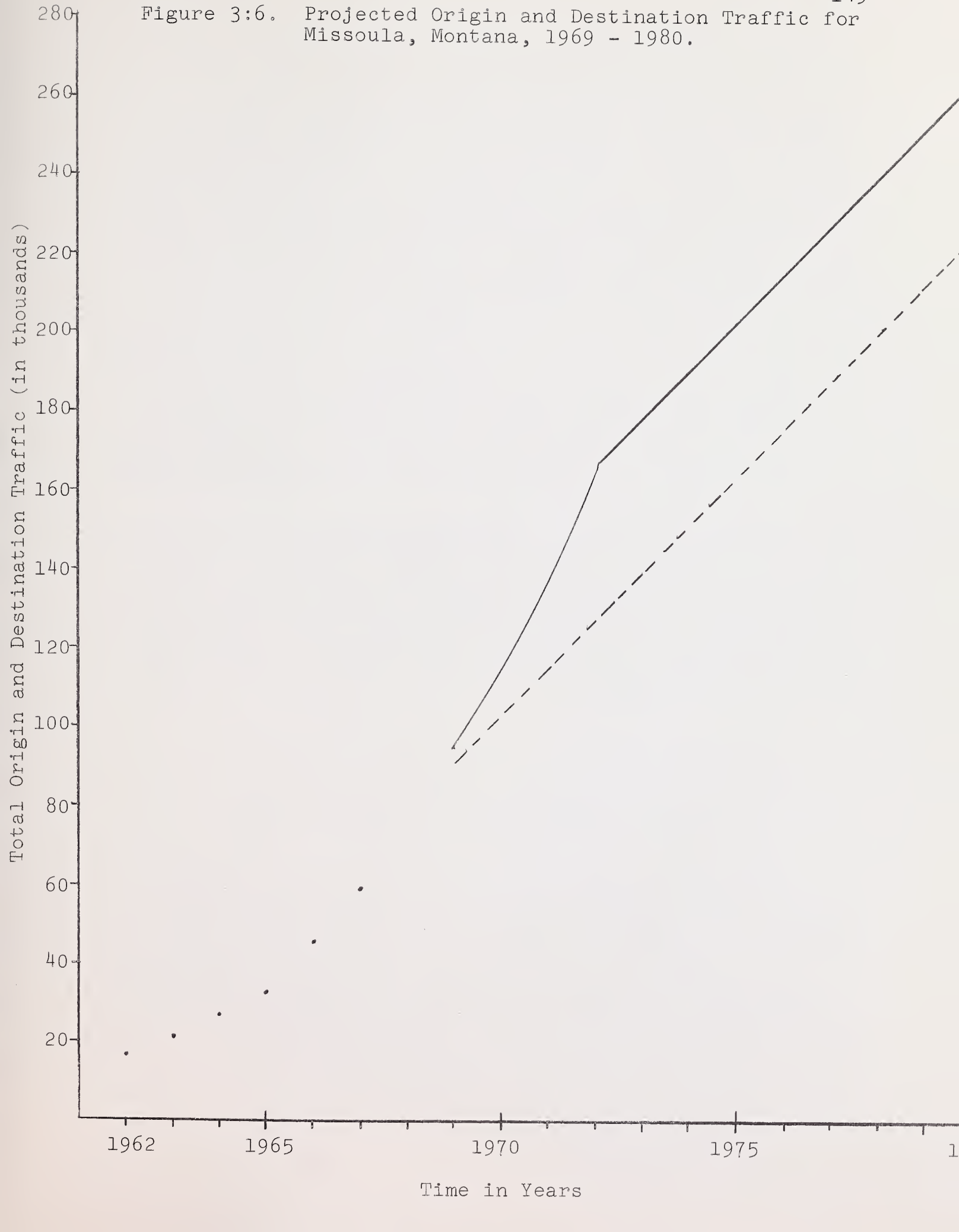
Total O & D Traffic By Year 1962 - 1967

1962	1963	1964	1965	1966	1967
18,200	21,180	26,280	34,480	46,400	58,850

Year	Projected O & D Traffic By Year 1969 - 1980		Statistical Model Results Used in Arriving at Traffic Projections		
	Lower Limit Projection	Upper Limit Projection	Quadratic Regression Fitting 1962-1967 Data Points*	Linear Regression Fitting 1962-1970 Data Points*	Linear Regression Fitting 1962-1967 Data Points*
1968	-	-	75,380	-	-
1969	91,140	94,240	94,240	91,140	71,150
1970	103,340	115,780	115,780	103,340	79,350
1971	115,540	139,970	139,970	115,540	87,550
1972	127,740	166,830	166,830	127,740	95,760
1973	139,940	179,030	196,360	139,940	103,960
1974	152,150	191,230	228,550	152,150	112,160
1975	164,350	203,440	263,400	164,350	120,360
1976	176,550	215,640	300,920	176,550	128,570
1977	188,750	227,840	341,110	188,750	136,770
1978	200,950	240,040	383,960	200,950	144,970
1979	213,160	252,240	429,480	213,160	153,180
1980	225,360	264,450	477,660	225,360	161,380

*Data points 1962-1967 taken as historic; data points 1968-1970 taken as estimated by quadratic regression fitting 1962-1967 historic data.

Figure 3:6. Projected Origin and Destination Traffic for Missoula, Montana, 1969 - 1980.



or upper limit projections, during the ten year period. The upper limit projection estimates that 1980 traffic will be 2.28 times 1970 traffic, compared to an increase of 3.23 times from 1962 to 1967. As stated earlier, this 1962-1967 rate of growth was achieved without any direct north/south service, which has since been added. The range of projections for Missoula, as for Bozeman, is somewhat wider than for the other cities. The range in 1970 is 12,440 passengers, or a difference of twelve percent between the lower limit and the upper limit. For 1980, the projection range is nearly 40,000 passengers, a difference between lower and upper limit projections of 17.3 percent.

However, throughout the period from 1970 to 1980, a decrease is expected in terms of the rate of market growth per year. The projected average number of passengers added per year in the period 1970 to 1980 varies from 12,202 on the lower limit to well over 14,000 on the upper limit. The number of passengers added per year in the 1967 to 1970 period ranges from 14,830 to 18,977, which, although high, is logical due to the direct effect of increased frequency and new north/south service.

Estimated traffic for Missoula in 1967 is based entirely upon past records. The fourth quarter traffic for 1967 was estimated by the missing data procedure, while the first three quarters reflect the actual traffic. Therefore, the 1967 estimate does not take into account the introduction of Frontier Airlines into the Missoula market in the fourth quarter of 1967. This is the same procedure used in the Bozeman projections.

TRAFFIC PROJECTIONS FOR BUTTE, MONTANA

The projection of traffic for the Butte market is complicated by the recent Western Montana Service Investigation Case and the resultant service to Bozeman and Missoula. Traffic records at Butte are somewhat distorted due to the use of the Butte airport by Bozeman and Missoula residents who no longer require Butte's north/south connections. The historic growth rates for Butte, which appear on the following page, have been high and stable.

Historic Growth Rates

1962-63	1963-64	1964-65	1965-66	1966-67	1962-67
23.8%	20.4%	20.4%	20.2%	6.5%	129.5%

These growth rates are calculated using data adjusted upward for the third quarter of 1966, due to the air strike, and estimated data for the fourth quarter of 1967, due to no published data at time of this study. The 1966-1967 rate is far below those of earlier years, at least partially the result of the extended copper strike during part of this period.

The statistical models all resulted in approximately the same projections. This is due primarily to the copper strike and the low growth rate for 1966-1967. As a result, the quadratic regression was not used as an upper limit as it was with most other markets.

The linear regression from 1962 through 1970, which involves the observed points for 1962 through 1967 and the quadratic estimates for 1968 through 1970, projects Butte traffic in 1968 of 60,080 passengers. This regression also predicts an increase in traffic of 6230 origin and destination passengers per year between 1968 and 1980. This is believed to be the best estimate of annual increase for Butte traffic, 1968 to 1980. Bounds, or upper and lower limits, are then placed around this projected line as shown in Table 3:9 and Figure 3:7.

As mentioned earlier, the 1968 traffic in Butte was directly affected by the newly inaugurated service in Bozeman and Missoula. The second quarter of 1968 (April, May, and June) showed definite changes in the traffic pattern at Butte. The total traffic in 1968 is slightly lower than in 1967. In addition to this, Western Airlines' boardings are down thirteen percent, while Northwest's boardings are up twenty percent in 1968 as compared to 1967. The percentage of the total traffic traveling with Northwest is increasing relative to Western traffic. Northwest boardings were thirty-four percent of the total Butte boardings in 1967, and forty-one percent for the second quarter of 1968. The Western boardings were sixty-six percent in 1967 as compared with fifty-nine percent in the second quarter of 1968. The conclusion is that the Butte market is adjusting to a more even distribution of north/south and east/west traffic, while at the same time normal increases are not occurring.

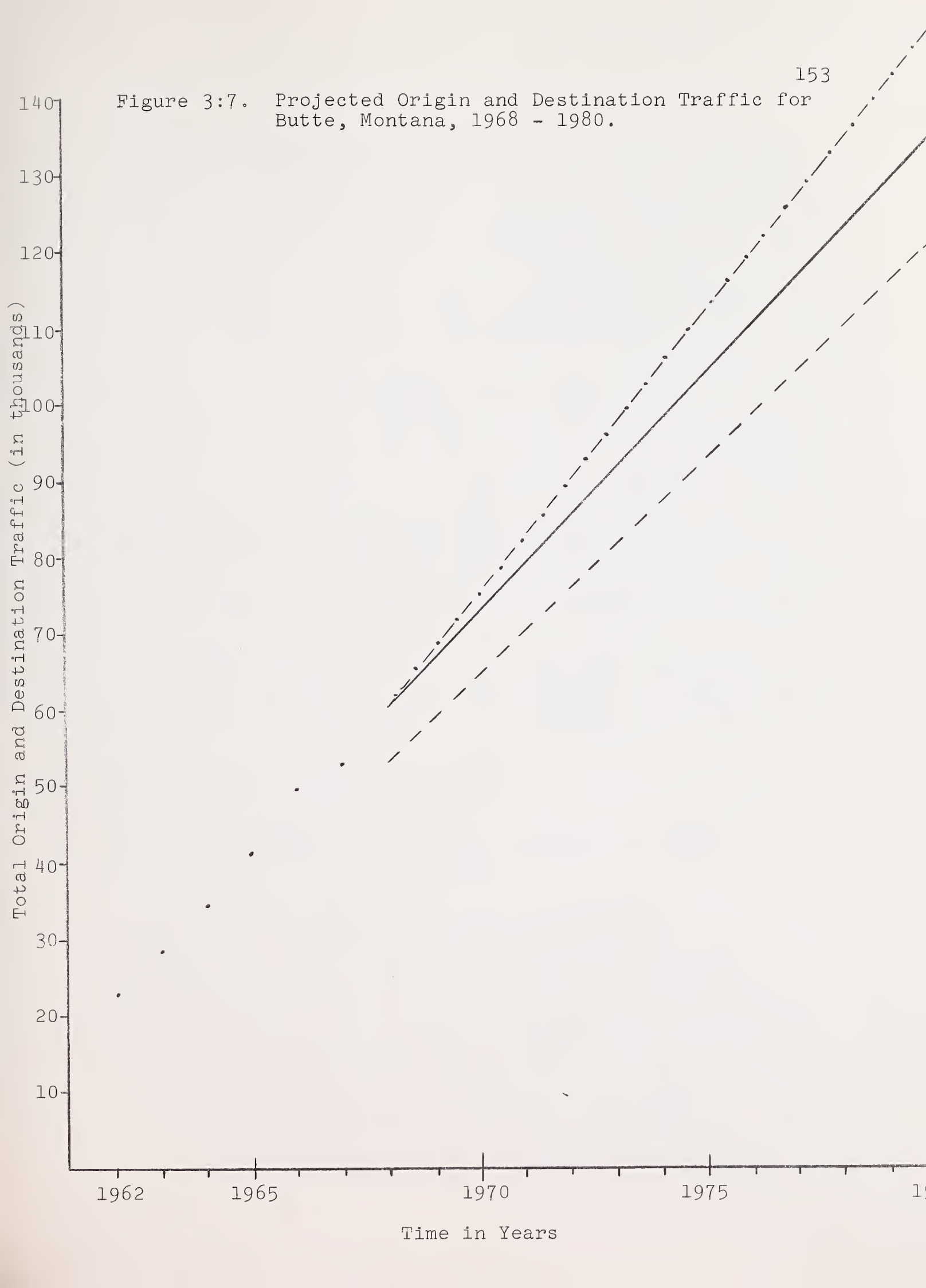
Table 3:9. Historic Origin and Destination Traffic for Butte, Montana, with Projections 1968 - 1980 on the Basis of Three Projection Models

Total O & D Traffic By Year 1962 - 1967					
1962	1963	1964	1965	1966	1967
23,030	28,530	34,340	41,350	49,690	52,940

Year	Projected O & D Traffic By Year 1968 - 1980		Statistical Model Results Used in Arriving at Traffic Projections		
	Lower Limit Projection	Upper Limit Projection	Quadratic Regression Fitting 1962-1967 Data Points*	Linear Regression Fitting 1962-1970 Data Points*	Linear Regression Fitting 1962-1967 Data Points*
1968	52,940	60,080	60,130	60,080	60,320
1969	58,640	67,430	66,260	66,300	66,600
1970	64,340	74,780	72,340	72,530	72,890
1971	70,040	82,130	78,390	78,760	79,180
1972	75,730	89,480	84,400	84,980	85,460
1973	81,430	96,830	90,350	91,210	91,750
1974	87,130	104,180	96,280	97,440	98,040
1975	92,830	111,530	102,160	103,660	104,330
1976	98,530	118,880	108,010	109,890	110,610
1977	104,230	126,230	113,800	116,120	116,900
1978	109,920	133,580	119,570	122,340	123,190
1979	115,620	140,930	125,290	128,570	129,470
1980	121,320	148,280	130,970	134,800	135,760

*Data points 1962-1967 taken as historic; data points 1968-1970 taken as estimated by quadratic regression fitting 1962-1967 historic data.

Figure 3:7. Projected Origin and Destination Traffic for Butte, Montana, 1968 - 1980.



It is expected that the Butte market will experience a smaller increase in total traffic from 1967 to 1968 than would normally be expected. In fact, the first part of 1968 suggests that 1968 traffic may be no greater than 1967 traffic. Hence, the lower limit for 1968 is assumed to begin at the same level as the observed traffic in 1967. The end of that projection, or lower limit, is set at ten percent below the traffic forecast of 134,800 for 1980. The upper limit projection starts at 60,080 and increases to a 1980 level ten percent above the 134,800 projected for 1980 by the original linear regression model.

This projection shows an average annual rate of increase for Butte in the 1968 to 1971 period of approximately ten percent, and a doubling of the size of the Butte market in the period 1970 to 1980. The approximate number of passengers added per year throughout the projection time period ranges from 5700 on the lower limit projection to 7350 on the upper limit. The percentage difference between the upper limit and lower limit projections for Butte in 1980 is twenty-two percent, and the percentage difference in 1970 is sixteen percent. This is a wider range for 1970 than in most other city projections, due primarily to the uncertainty caused by the newly inaugurated service in Bozeman and Missoula.

It is concluded that Butte traffic will continue to grow consistent with the regression models, providing that an adjustment is made for the first year of new service at Bozeman and Missoula.

TRAFFIC PROJECTIONS FOR THE EIGHT SMALLER CITIES

The next chapter of this report, which discusses commuter airline service and the possible role of a third level air carrier in providing Montana with an additional dimension of air service, includes considerable discussion of traffic projections for each of the eight smaller cities being considered here. The projections in this section do not assume the existence of the commuter airline system discussed in the next chapter. They assume that the service pattern and the pattern of improvement of service, including frequency and schedule, will be approximately the same in the future as they have been in the past. Table 3:10 and Figure 3:8 show an upper and lower limit projection for the eight smaller cities in Montana from 1968 to 1980.

The lower limit projection is determined in the same way as for other cities in that it is the linear regression of points 1962 through 1970. The upper limit projection method, on the other hand, is different from that for any other city. The quadratic regression is believed to serve as a meaningful upper limit throughout the entire projection period of 1968 to 1980.

The average growth rates for these smaller cities from 1962 through 1967 have been as follows:

Historic Growth Rates

1962-63	1963-64	1964-65	1965-66	1966-67	1962-67
42.3%	8.1%	8.4%	26.3%	11.4%	134.5%

As before, these growth rates are calculated using data adjusted upward for the third quarter of 1966, to account for the air strike, and estimated data for the fourth quarter of 1967, because published data at time of printing was unavailable. The third quarter traffic for 1966 was estimated at 8230 making a yearly total of 26,940. The air strike did not have as great an impact in these smaller cities as in the rest of Montana because the airlines serving these cities were not on strike. However, the total air system of the United States was disrupted by the strike, and some impact was definitely felt.

The growth rates during the period 1962 to 1965 in these smaller cities have ranged from a low of eight percent to a high of over twenty-five percent. The growth rates within the individual cities fluctuate over a wide range. In many instances these fluctuations can be traced directly to such conditions as scheduling.

It is indisputably clear that Kalispell has been by far the most important market included in this category of the eight smaller cities. It is reasonable to assume that the Kalispell market will continue to be of major importance, particularly in view of the fact that the population increases projected for Kalispell are large, while little or no population increases are anticipated in most of the other trade areas. Kalispell accounted for over thirty-five percent of the traffic to and from these eight smaller cities during the period 1965-1966. It is projected that Kalispell will account for forty-five percent of the total traffic for these eight smaller cities by 1980. Kalispell traffic is projected to range between 34,000 and 42,000 total origin and destination passengers in 1980.

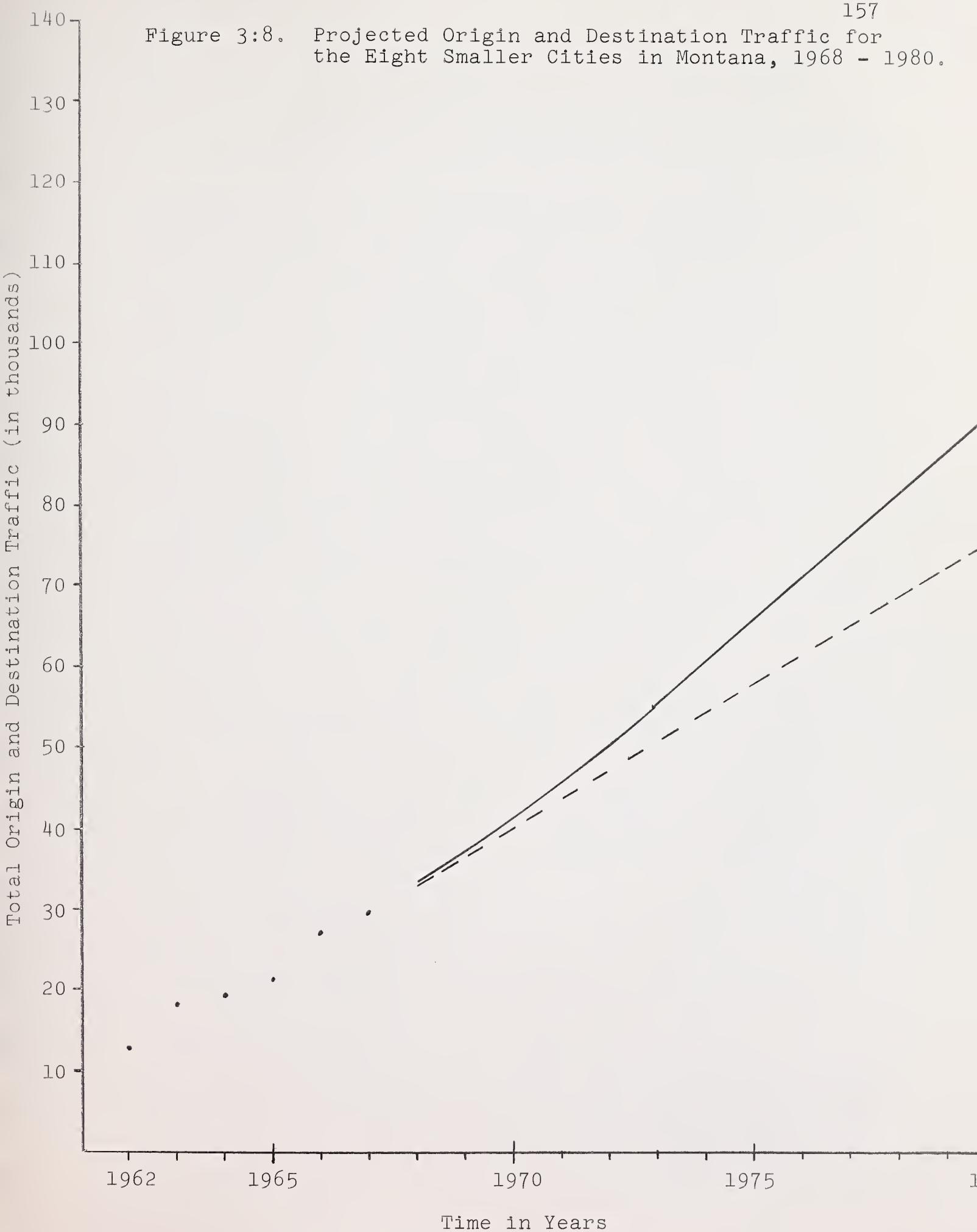
Table 3:10. Historic Origin and Destination Traffic for Eight Smaller Cities in Montana, with Projections 1968-1980 on the Basis of Three Projection Models

Total O & D Traffic By Year 1962 - 1967					
1962	1963	1964	1965	1966	1967
12,790	18,200	19,670	21,330	26,940	30,000

	Projected O & D Traffic By Year 1968 - 1980		Statistical Model Results Used in Arriving at Traffic Projections		
Year	Lower Limit Projection	Upper Limit Projection	Quadratic Regression Fitting 1962-1967 Data Points*	Linear Regression Fitting 1962-1970 Data Points*	Linear Regression Fitting 1962-1967 Data Points*
1968	33,910	33,680	33,680	33,910	32,880
1969	37,430	37,630	37,630	37,430	36,140
1970	40,940	41,740	41,740	40,940	39,390
1971	44,450	46,030	46,030	44,450	42,650
1972	47,970	50,480	50,480	47,970	45,900
1973	51,480	55,110	55,110	51,480	49,160
1974	54,990	59,910	59,910	54,990	52,410
1975	58,500	64,890	64,890	58,500	55,670
1976	62,020	70,030	70,030	62,020	58,920
1977	65,530	75,350	75,350	65,530	62,180
1978	69,040	80,840	80, 40	69,040	65,430
1979	72,560	86,500	86,500	72,560	68,690
1980	76,070	92,330	92,330	76,070	71,940

*Data points 1962-1967 taken as historic; data points 1968-1970 taken as estimated by quadratic regression fitting 1962-1967 historic data.

Figure 3:8. Projected Origin and Destination Traffic for the Eight Smaller Cities in Montana, 1968 - 1980.



It is assumed that the other cities will remain in the same relationship to one another as existed in 1965-1966. Thus, the remaining block of passengers is divided between the cities of Glasgow, Lewistown, Miles City, Sidney, Glendive, Havre, and Wolf Point.

It must be recognized that these cities are smaller markets, and they have a smaller base traffic from which to begin projections. Thus, individual fluctuations in these markets can be expected to be high, as has been the case in the past. Increased or decreased economic activity in any of these areas could significantly affect the use of air transportation. Two such examples are presently evident. One is the de-activation of the Glasgow Air Force Base, and the possibility that nothing will replace it economically. This would have a tremendous downward impact, at least initially, on the commercial air traffic flow to and from Glasgow. On the other hand, it is conceivable that something will replace it or make use of the air base facilities which is a higher generator of traffic than was the air base itself. Another case in point is that the increased activity in the oil fields in and around the Miles City area could have a significant impact on that market. The new airport facilities at Sidney and Glendive are also important.

Table 3:11 shows an upper and lower limit projection for each of the eight smaller cities based on the assumption that, with the exception of Kalispell, they will maintain the same relative percentages of total traffic as they had in 1965-1966. These projections by city should not be viewed as a concrete traffic estimate, because minor changes in economic activity, industrial growth, agriculture and/or air service could make these projections unrealistic. It is shown in the next chapter that much more significant increases in air service usage are possible than those projected here. These projections are completely neutral in their assumptions for the future.

For all cities except Kalispell, the lower limit projection assumes that the traffic in 1980 for each city will be 2.27 times the average 1965-1966 level. The upper limit projection, on the other hand, assumes that 1980 traffic will be 2.75 times its level in 1965-1966.

The projection included here for Kalispell assumes no major service improvement. It is concluded that the Kalispell market is severely undeveloped and warrants immediate attention. It is strongly recommended that a comprehensive study of the Kalispell trade area be undertaken. The purpose would be to analyze the existing market potential of the area now and in the future to serve as a basis for action programs leading to major service improvements.

Table 3:11. Traffic Projections for the Eight Smaller Cities for 1980, Assuming No Major Service Improvements.

City	1980 Lower Limit	1980 Upper Limit
Kalispell	34,000	42,000
Glasgow	10,896	13,200
Lewistown	6,719	8,140
Miles City	6,514	7,892
Sidney	6,106	7,398
Glendive	4,267	5,170
Wolf Point	3,860	4,675
Havre	3,496	4,235

TRAFFIC PROJECTIONS FOR WEST YELLOWSTONE, MONTANA

The West Yellowstone market is unique because of several very important characteristics. The most basic factor is that service is for a short and well defined season. A second and equally important factor is that the market depends entirely on the tourist traveling public, and traveling habits are constantly changing. It is further complicated by the fact that the airport is located at a high elevation which creates limitations on aircraft operation. The fourth factor is that service improvements at West Yellowstone are extremely hard to predict in that they depend entirely upon the decisions of the various air carriers which operate in the market.

All of the carriers presently serving West Yellowstone are operating on a seasonal basis. However, they are certified by the Civil Aeronautics Board to operate on a year-round basis. There is considerable interest in West Yellowstone in year-round air service to compliment a

rapidly growing winter recreational complex in and around Yellowstone Park. To predict when year-round operations will commence is, however, extremely difficult because winter recreational development is largely dependent upon year-round air operations, while year-round air operations are entirely dependent on winter recreational developments. There is also the problem of keeping an airport such as West Yellowstone's operational during the winter due to heavy snowfall and associated weather problems. Winter recreational opportunities are developing in and around West Yellowstone and Yellowstone Park. However, the economic feasibility of winter air operations to West Yellowstone, although not studied in depth, is questionable at this point in time. This is not to say, however, that it will not become economically feasible in the near future.

This leads directly to the second important characteristic of the West Yellowstone market, its reliance on the traveling tourist public. The initiation of year-round operation will depend upon public demands to an extremely high degree. As demands increase for winter recreational outlets, it is very likely that increased winter recreational development will take place at West Yellowstone, resulting eventually in year-round air service.

It is extremely difficult to predict the traveling habits of the American touring public, but this is necessary for a defensible and realistic projection of traffic at West Yellowstone. One could assume that these traveling habits will remain approximately the same between now and 1980. This is, however, an extremely tenuous assumption. It is conceivable that the West Yellowstone market could double or even quadruple in a period of only two to five years in a response to a change in traveling habits alone. How rapidly traveling habits can change is illustrated by travel during the first half of 1968 in Yellowstone Park. Data for the early part of 1968 show an increase of five percent in the total number of visitors to the Park over a comparable period in 1967. In the same time, however, the number of trailer visits has increased twenty-five percent, and the number of pick-up camper visits has increased twenty-one percent. There is no reason to believe that these same kinds of changes could not take place in the number of people visiting the Park by guided, park company tours which would necessitate travel to the Park gate by commercial transportation, probably air.

No conclusions are drawn with respect to the physical facilities problem at West Yellowstone. However, it is clear that runway length is a problem for effective jet aircraft operation at this elevation. Considerable disagreement exists between agencies, airlines, and manufacturers

as to what the runway requirements should be under these conditions. In any event, there is a runway facility problem for jet equipment attempting to use this airport. However, it is assumed throughout the remainder of this study that this is a problem which can and will be resolved.

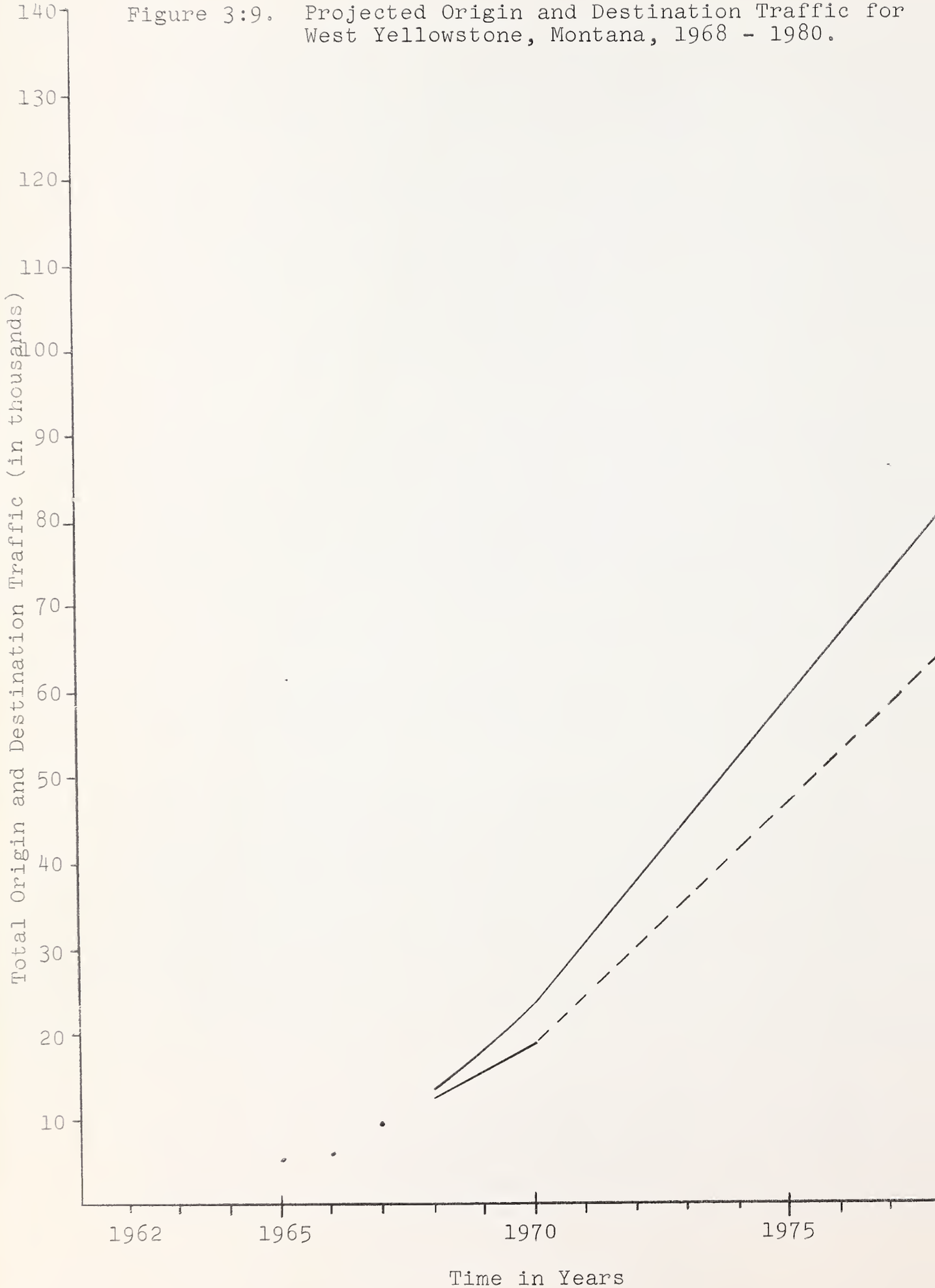
People in the West Yellowstone community are presently talking about the possibility of large scheduled flights to eastern markets such as Chicago, New York, Washington, D. C., etc., on a once- or twice-a-week basis. It is also possible that other direct routes could be extended into various areas of the country with the same success as has been experienced by Western Airlines with their direct flights into the San Francisco and Los Angeles metropolitan areas. Both Frontier and Western Airlines have shown an intense interest in the development of the West Yellowstone market. It is entirely possible that other carriers may become interested in serving this market as public demand increases. The eastern markets are now served through connections with Frontier at Denver and Billings, but the eastern markets have no direct service into West Yellowstone. A study of the economic feasibility of direct routes to the eastern markets has not been included, but it is interesting to speculate concerning this because of the great response that has been experienced by Western Airlines in the Los Angeles/San Francisco and associated California markets which are now served directly.

The West Yellowstone market is extremely volatile and nearly impossible to project. Therefore, the range of prediction is wider and considerably less reliable than the other projections.

For West Yellowstone, point projections are included only for 1970, 1975, and 1980. The 1970 projection is calculated by applying an average annual rate of increase of twenty-five percent for the lower projection and thirty-five percent for the upper limit. This yields a projection of total origin and destination traffic in 1970 at West Yellowstone of between 18,850 and 23,740. The 1980 traffic is then assumed to be four times greater than the 1970 traffic forming upper and lower limits as shown in Figure 3:9. This procedure results in a traffic projection for 1980 ranging from 75,400 to 94,960. The 1975 projection is 47,130 to 59,350.

This projection is made on a judgment basis only. A market such as West Yellowstone can be expected to vary considerably, depending upon the multitude of complex factors discussed above. It is reasonable to assume, however, that Yellowstone Park is going to continue to be a significant recreational outlet for increasing numbers of people in

Figure 3:9. Projected Origin and Destination Traffic for West Yellowstone, Montana, 1968 - 1980.



the years ahead. It is equally clear that more and more of the traveling public is using air transportation to reach major recreational areas and using commercial surface transportation while in the area. This growth is encouraged by the factors discussed earlier in this report of rising incomes and increases in leisure time. There is no doubt that families in our society have more disposable income and have more leisure time because of shorter work weeks and longer annual vacations.

It is certain, however, that the development of this market is closely tied to the attitudes of the airlines serving it and the improved service made available to the market. These are indeed difficult to predict for 1980.

REVISED ORIGIN AND DESTINATION TRAFFIC 1966/1967

As explained earlier in this report, the 1966 third quarter statistics for origin and destination traffic is adjusted to account for the air strike of 1966. Likewise, the recorded traffic for the first three quarters of 1967 and an estimated traffic for the fourth quarter of 1967 are used to determine data points for 1967.

Tables 3:12 and 3:13 list the observed and estimated points for the third quarter and entire year of 1966. These tables also include the observed data from Civil Aeronautics Board reports for the first three quarters of 1967 and the estimated data for the fourth quarter and entire year of 1967. Table 3:12 is for the big six cities, and Table 3:13 is for the eight smaller cities.

Table 3:12. Revised Origin and Destination Traffic 1966, 1967 for the Big Six Cities

City		1966 3rd Qt.	1966 Year	1967 1st Qt.	1967 2nd Qt.	1967 3rd Qt.	1967 4th Qt.	1967 Year
BILLINGS	Observed	33,660	144,220	36,860	45,120	49,760		
	Estimated	43,630	154,190				45,150	176,890
GREAT FALLS	Observed	34,660	144,980	36,660	40,880	50,000		
	Estimated	44,730	155,050				43,450	170,990
HELENA	Observed	4,400	21,820	6,180	7,330	7,670		
	Estimated	6,240	23,660				7,590	28,770
BUTTE	Observed	10,600	46,550	11,270	14,990	13,080		
	Estimated	13,740	49,690				13,600	52,940
MISSOULA	Observed	7,560	40,060	10,840	15,260	18,100		
	Estimated	13,900	46,400				14,650	58,850
BOZEMAN	Observed	1,580	10,350	2,870	3,820	5,500		
	Estimated	4,210	12,980				4,000	16,190

Table 3:13. Revised Origin and Destination Traffic 1966, 1967 for the Eight Smaller Cities

City		1966 3rd Qt.	1966 Year	1967 1st Qt.	1967 2nd Qt.	1967 3rd Qt.	1967 4th Qt.	1967 Year
LEWISTOWN	Observed	640	2,740	480	650	970		
	Estimated	900	3,000				820	2,920
KALISPELL	Observed	2,190	7,760	2,110	2,650	3,890		
	Estimated	3,070	8,640				2,800	11,450
HAVRE	Observed	240	1,430	330	330	420		
	Estimated	510	1,700				300	1,380
GLASGOW	Observed	1,030	4,300	1,340	1,180	1,240		
	Estimated	1,250	4,520				1,320	5,080
WOLF POINT	Observed	270	1,450	460	360	500		
	Estimated	460	1,640				450	1,770
SIDNEY	Observed	590	2,510	780	550	680		
	Estimated	700	2,620				740	2,750
GLENDIVE	Observed	360	1,660	380	310	680		
	Estimated	580	1,880				500	1,870
MILES CITY	Observed	770	2,950	650	620	700		
	Estimated	770	2,950				810	2,780

CONCLUSIONS AND TRAFFIC PROJECTIONS FOR THE STATE OF MONTANA TO 1980

The term saturation has been mentioned in several of the city reports in this chapter. Saturation has been defined as the attainment of that condition in a particular market where the present needs of the consumer are being completely and adequately fulfilled. This means that additional traffic will be generated only as needs change, or as the community expands its population and economy. It is unlikely that such saturation is going to occur in many of Montana's markets, especially since many are marginal markets where service improvements tend to lag behind needs. This lag in service improvements also reflects the lack of competition discussed in other sections of this report.

The projection models employed in this chapter have generally assumed a degree of saturation in the early to middle 1970's. Rates of traffic growth decline throughout the entire period of projection, and the number of passengers added each year throughout much of the period is assumed to be constant. In the upper and lower limit projections beyond the middle 1970's, a constant number of passengers is added each year, while up to the middle 1970's the number of passengers added is increasing annually.

Another important factor which could have significant impacts on the projections for the last half of 1968 and 1969 is that service to the major cities of Great Falls, Billings, Butte, Bozeman, Helena, and Missoula could be completely transformed from an equipment standpoint. Northwest Airlines, for example, is ready and desirous of an opportunity to remove the turbo-prop service to the Montana cities mentioned and to replace it with all jet service. Northwest anticipates using Boeing 727 jets throughout nearly all of the Montana system by the middle 1970's. Western Airlines indicates that by the last half of 1968 all of their Lockheed Electra equipment is likely to be phased-out in Montana, and replaced with Boeing 737 jets. The use of improved equipment by Northwest and Western could have significant impact as an accelerator of traffic growth. It has long been recognized that traffic is stimulated by the use of jet equipment. No attempt is made to project the amount of this stimulation, but even a two to five percent increase would be extremely significant.

Frontier Airlines also indicates that jet equipment will be used in many of their Montana markets within the next few years. In fact, Frontier recently proposed jet routes into Montana in connection with their presentation in the Southern California Service Investigation Case. No awards were made to Frontier in the Case, but it is clear that Frontier jet flights to Billings, Great Falls, Missoula, and Bozeman are within the realm of possibility in the next few years.

Air West also anticipates the addition of numerous jet flights to their system. However, there is no definite indication that Kalispell and Great Falls are in a position to receive consideration for this kind of service from Air West. However, Air West will be seeking new routes adaptable to the use of jet equipment, some of which could well be in Montana. In the Kalispell area there is considerable interest in the development of airport facilities adequate for jet aircraft.

The projections outlined here assume that these service improvements will follow a pattern much as they have in the past. This is true with regard not only to equipment, but also such items as scheduling, frequency, increased competition, and new route development. It is also assumed that Montana communities and the Montana Aeronautics Commission will continue to work vigorously for service improvements. Hence, the projections do not assume a perpetuation of the status-quo, but rather a pattern of change similar to that of the past.

A comparison of Civil Aeronautics Board origin and destination traffic reports to originating traffic reported by airlines, as published in the airport activities statistics, is cause for some concern. Origin and destination traffic reported in the Civil Aeronautics survey is not directly comparable to the originating traffic reported in the airport activities statistics. One would assume that a comparison such as this could be made for markets where only one carrier serves the market, and that the originating traffic as reported by the carrier would equal approximately one half of the total origin and destination traffic reported. That is not the case.

For example, for Miles City, Glasgow, Sidney, Wolf Point, Glendive, Havre, and Lewistown, Civil Aeronautics Board origin and destination traffic totals are approximately eleven percent lower than are the boardings reported by Frontier Airlines for the years 1964, 1965, and 1966. Of the twenty-one comparisons made in this three year period with seven cities, in only one case is the traffic as reported by the airline lower than that reported in the Civil

Aeronautics Board Statistics. The differences by year for the seven cities show Civil Aeronautics Board statistics to be 9.3, 10.3, and 12.0 percent lower than traffic reported by the airline for the years 1964, 1965, and 1966 respectively.

The Civil Aeronautics Board statistics are of tremendous value in research because the statistics can be used to determine a pattern of traffic movement. This is more important in some instances then the total amount of traffic. The discrepancy, however, is one that must be examined. According to statistical probability, one would expect that approximately one-half of the time the airline data would show more boardings than reported by the Civil Aeronautics Board, and the other half of the time they would show less. This, however, is not the case. It is very unlikely that this kind of a pattern of comparison could arise due to the distribution of statistical error.

A similar comparison is made for the cities of Missoula, Bozeman, and West Yellowstone for the time period 1964-1966. The same discrepancy is evident, however, the differences are smaller for Missoula and Bozeman and much larger for West Yellowstone. In the case of Missoula, the difference is 6.3 percent, and for Bozeman it is only 2.7 percent. The difference for West Yellowstone is approximately 35 percent. The probability of this occurring strictly by error, as mentioned earlier, is so small that it has been rejected as a possibility. Discussions with airline analytical staffs reveal that they recognize the existence of these discrepancies.

It is much less clear, however, why they are not comparable, and the action that should be taken regarding non-comparability. In some instances, airlines have argued that the Civil Aeronautics Board origin and destination statistics tend to underestimate the true traffic. However, in other instances, the reverse argument has been employed. For example, in Civil Aeronautics Board Case, Docket No. 18586 Exhibit WA 330, Western Airlines showed that for American, Braniff, Continental, Delta, Eastern, National, Northwest, Northeast, TWA, United, and Western there was a difference between passengers originating shown in terms of the airport activities statistics and originating passengers shown in the Civil Aeronautics Board competition studies. This was for the year 1966. In every instance, the Civil Aeronautics Board data was lower than the airport activity statistics data for originating traffic, the difference ranging from 3.5 percent to 16.6 percent. The average is a percentage difference of approximately nine percent, comparable to that found in Montana markets.

Delta Airlines, on the other hand, in its Civil Aeronautics Board exhibits, Docket No. 18257, Exhibit DRL 100, indicates quite a different position. The exhibit of Delta Airlines illustrates that the Civil Aeronautics Board data is all determined in a uniform fashion. Therefore, Delta argues that the two sets of data are not comparable. Any attempt to make them comparable, through an adjustment of either series, is therefore difficult, if not impossible. Delta's position relative to the increasing or adjusting of Civil Aeronautics Board data to account for this difference is quoted from the Delta Airlines exhibit as follows:

> The traffic figures contained in the O & D survey and Competition Study are the result of systematic recording by all carriers, of data collected under uniform detailed instruction. The data is subsequently reported to and compiled for industry use by the Office of Carrier Accounts and Statistics - Civil Aeronautics Board. This information, which is invaluable to the carriers, is not available from any other source.
>
> The only justification offered by carriers who claim the survey inaccurate is that the figures they interpret as being originated passengers do not agree with those shown on carriers' Schedule T-4 reports under this same heading. In the absence of any uniform procedure to be followed by all carriers, the number of originating passengers, shown by each carrier on its respective Schedule T-4 report, will vary as individual carrier's methods of determination vary. For example, American's, Braniff's, Continental's, National's, and Western's methods would each produce a different originating passenger count for Delta than was produced by the Delta method. Certainly any figure subject to this variance itself cannot qualify as a standard of accuracy.
>
> Since an absolute standard of comparison is not available, the correctness of the O & D data cannot be disputed with sufficient adequacy to warrant changing any figures. To the extent the data can be properly tested, the evidence indicates it produces more accurate industry records than can be determined from individual carrier's T-4 reports.

It is evident from this discussion that it is not possible to isolate the reason for the understatement which generally results by using Civil Aeronautics Board data instead of the airline data. All of the projections in this chapter and all of the materials in this report are based entirely upon the Civil Aeronautics Board sample data. It is entirely possible that the Civil Aeronautics Board tends to understate the actual traffic. It appears that the smaller markets are underestimated more than larger markets. If adjustments are to be made, it seems that eight to twelve percent would be reasonable for the smaller markets and three to six percent for the big six cities in Montana. There is little agreement, however, with respect to the wisdom of making such adjustments. The above adjustment ranges are based primarily on discussions with analysts on staffs of airlines serving Montana. In the case of this study, however, no such adjustments have been made.

The traffic projections for the state of Montana are calculated by a simple addition of the traffic projections for the individual cities involved. Table 3:14 shows the estimated traffic for the state of Montana for the years 1969 through 1980. The estimated traffic for 1975 ranges from 1.18 to 1.44 million passengers. The 1980 projection ranges between 1.58 and 1.87 million passengers. The volume of traffic is expected to multiply two to two and one-half times from 1969 to 1980. Upper and lower limit projections are included as for the individual city projections.

A recent article published in *Air Travel Magazine* of the *Official Airline Guide*, November 1967, discusses projections of traffic for eleven major United States trunk lines by the Civil Aeronautics Board staff. The original projections, made in 1964, varied from 84.4 billion passenger miles to 118.9 billion passenger miles for 1975. This range of projections was based on three different assumptions concerning fares. The 84.4 was a doubling from 1964 and made on the basis of fares increasing at a rate of 1.8 percent per year. The 118.9 billion passenger miles was nearly a tripling over 1964 and based on a 1.5 percent annual drop in fares.

These projections have recently been adjusted upward from the original projection range of 84.4 to 118.9 to a level in 1975 of 132 to 187 billion passenger miles. In other words, data available at the present time indicates that the original projections were considerably low. The new 1975 projections result in average annual increases of 11 to 14.6 percent, for the period 1964 to 1975.

Table 3:14. Historic Origin and Destination Traffic for the State of Montana with Projections 1969 1980

Total O & D Traffic by Year 1962 - 1967					
1962	1963	1964	1965	1966	1967
229,280	279,880	318,820	386,480	474,990	544,280

Projected O & D Traffic by Year 1969 - 1980		
Year	Lower Limit Projection	Upper Limit Projection
1969	703,460	737,680
1970	784,950	862,180
1971	864,810	999,410
1972	944,670	1,148,360
1973	1,024,530	1,264,320
1974	1,104,390	1,350,010
1975	1,184,260	1,435,900
1976	1,264,210	1,521,940
1977	1,343,980	1,608,160
1978	1,423,830	1,694,560
1979	1,503,710	1,781,120
1980	1,583,570	1,867,860

Projections have also been made for the period 1975 to 1977. The projected annual increases for that period are 7.7 percent as a minimum and 12.4 percent as a maximum. Thus, very little leveling off is expected in the period 1975 to 1977 as compared to the period 1964 to 1975. The article indicates that the new projection takes into account trends in such items as personal income, population growth, prices, etc.

This information on Civil Aeronautics Board projections is included to indicate the thinking of people within the airline industry with respect to increases in the use of air traffic in the total United States market during much of the time period included in this study. It is interesting to note that these projections also include projection ranges. The industry and the traveling public have responded in such a way that original projections have tended to be low.

In conclusion it must again be stressed that the forecasting of traffic for this long a period is difficult. But it is vital for the kind of planning necessary to meet anticipated demands for air service. Significant increases in the volume of traffic are projected. In fact, at first examination, the projections may seem to be high. However, these projections have been made using all information available for the State Air Survey. It is more likely that these projections will prove to be low than high. There is always a tendency to underestimate in situations where such tremendous changes are anticipated. The airline industry is young, and all indications point towards its growing importance to the American economy.

Although, these projections should be viewed and used, at this time, as the best estimates of traffic into the future, there should be complete freedom to change or alter them over time. It is recommended that these projections be adjusted as conditions change. They should be used as a guide for the examination of the future and altered as conditions require between now and 1980.

CHAPTER 4

THE POSSIBLE ROLE OF THIRD LEVEL AIR CARRIERS IN MONTANA

The role of commuter air service as a part of the air transport system of the United States has undergone very significant changes in recent years. A recent report published by the Federal Aviation Agency traces some of these changes through the period 1964 to 1966. It indicates that the total number of scheduled air taxi operators has grown from 12 to 116 during the three year period. With few exceptions the operators are located around air traffic hubs and 33 are under agreement to serve as extensions and feeders to trunk and local service airlines. During this same period, the number of aircraft engaged in air taxi operations increased from 72 to 510, but the number of aircraft per operator has tended to decline, as many operators shift to larger multi-engine aircraft.

Of the 116 air taxi services operating in 1966, eighty-eight reported load factors greater than forty percent, while fourteen operators did not report load factors. This leaves fourteen operators reporting load factors of forty percent or less. These load factors are significant in light of the fact that air taxis are relatively new and developing services in many markets. There are also, however, many of them operating in high density, short-haul markets, which have well established traffic patterns. There has also been significant growth in travel requirements between many city pairs, which contributes to the high load factors observed.

Nationally, third level operations or commuter airlines are the fastest growing segment of the airline industry. Anything that is written about the present status of the industry is out-of-date before it can be published. The projected increase in the number of operators from 175 in 1967 to 225 in 1968 is evidence of the explosive and sometimes even convulsive growth of third level operations. Table 4:1 presents data on third level operations in the United States in 1967 and projections for growth in 1968, as compiled in a survey of forty percent of the third level airlines carried out by *Flight Magazine* and published in September and October, 1967.

This growth in the activities of commuter airlines is indicative of a changing pattern within the airline industry. The airline industry must expand as an orderly, safe, and efficient system of transportation. It is evident that the commuter or third level airline is going to play a part in providing this increased service, an expansion which will be further encouraged by improved equipment and service available, as well as in the increased overall demands for air service.

Table 4.1. Trends in Increased Activity of Third Level Airlines.

	1967	1968
Number of third level airlines	175	255
Aircraft operated	600	750
Points served (including duplicates)	400	500
Passengers carried	2,000,000	3,000,000
Airplane miles flown	45,000,000	70,000,000
Passengers miles carried	250,000,000	360,000,000
Departures performed	450,000	700,000
Total revenue	$35,000,000	$50,000,000
Number of employees	3,000	4,000

The number of operators in scheduled third level airline business has increased sharply in the last few years in response to the demands of a constantly expanding market. Yet they have been trying to satisfy this demand and break into this complicated, high cost business with aircraft which in many instances are not specifically suited for the purpose.

The survey by *Flight Magazine* reveals that thirty-four different types of aircraft, produced by sixteen different aircraft manufacturers, are now being used by third level airlines. This includes everything from small, four-place, single-engine aircraft to twin-jet equipment. The survey reveals a preference for twin engine equipment which is being supplied at the present time by only a few manufacturing companies.

The kind of equipment that is used in these commuter operations is certainly of significance to route development and the response of the public to the new service. The equipment that has been used in many instances in the past has not been suited to this kind of commercial operation, and therefore has served as a limiting factor to the development of the potential market.

Many airplane manufacturing companies today are examining this market carefully and attempting to design and/or manufacture equipment which will serve the market better. This new equipment, which is expected to be available in the next few years, could have large impacts upon the development of the third level or commuter airline system. Equipment changes could alter the cost structure of a commuter operation, and planes will likely be developed which more adequately fulfill the needs of the traveling public.

Any industry which expands and changes to the drastic degree that the third level or commuter airline industry has changed in the past few years, must expect to meet with many disappointments. Commuter operations are no exception. However, as the newest branch of the air transportation system, they have had considerable success as profitable businesses and in serving the total airline industry.

It is evident that public convenience and necessity in many instances require the services of third level or commuter type operations, and the growth in this industry is far from over. However, at best it is a risky business involving many uncertainties for the newcomer. The fate of each of the new third level operations will be decided primarily on an economic basis, revolving around the critical variables of management, fiscal responsibility, productive route structure and scheduling coupled with the correct choice of equipment and merchandising of the service provided.

The choice concerning route development is certainly a very important one. Historically, most third level carriers have operated aircraft on "radial route structures". These routes generally radiate around a major hub, like the spokes of a wheel, serving communities that do not have any scheduled air service. The feasibility of "linear type route structures" is now being considered, and in some cases commuter services are operating over such linear routes.

A number of interrelated factors are important in this rapid growth of third level operations in the United States. Many of these factors are directly related to the airline industry which has grown up around a series of major trunk and local service carriers. One of the real tendencies within the industry is that either the local service carrier fails and goes out of business or grows and becomes a trunk airline. Local service carriers are forced to grow because of the way the equipment is developing within the industry. This growth is also forced because of management's and stockholders' drive for profits.

Another related factor is that as new equipment is adopted by the airlines, in nearly every instance it involves

an increase in size. Technology and economic forces cause the airline to maintain only one or at most two lines of equipment in its system. Closely associated with this is the obsolescence factor which affects airline equipment. An example is the use of the Douglas DC-3. Five to ten years ago it was used extensively as a carrier for the transportation of passengers, freight, express, and mail. Today, the Douglas DC-3 has been discarded by most carriers because of the relatively high maintenance costs resulting from the unavailability of "back-up" parts, and because the aircraft is simply too slow for modern day air travel.

Demands are increasing for air service, which is clearly interrelated with economic development. More and more cities are striving to be included in the air transportation system which has broadened the demand. At the same time, more and more of our population have become aware of the value of time. The airline industry has as its main advantage the saving of time and the feature of convenience in travel. Coupled closely with this has been the recognition by the traveling public that frequency of flights is much more important than size of airplane. Many communities are striving to increase their frequency and directness to major markets and are placing less and less emphasis on the size of aircraft.

Another factor which has made the commuter air service or third level carriers more and more important is that over time a definite network of air service hubs throughout the United States has developed. With this development it has become apparent that the best service for many communities will result from high frequency service to these major hubs for connections to all regions of the United States. But this high frequency service is not consistent or even possible with major lines of jet aircraft. Instead of two stops per day with a 100-passenger airplane, communities require numerous stops with a 20-passenger aircraft, connecting to a major airline hub. This allows the passenger complete selection of routes, times, carriers, and types of services and equipment. The trend is definitely away from flying for prestige toward flying because of convenience and service, a function which can be fulfilled by commuter air operations.

An additional factor influencing commuter growth has been that as the airlines continue to adopt larger and larger equipment, it is necessary for airports to become larger and larger in order to handle this kind of equipment. This development further limits the number of major airports and makes the need for connecting services even greater. The size and wealth of many communities limits their ability to build and maintain airports for minimal frequency service with large jet equipment, but smaller facilities are within the means of most communities.

The demand for short-haul, frequently scheduled air service is unquestionably increasing rapidly. The lack of potential volume between many cities served by local service carriers or regional trunks and towns located off scheduled air routes discourages larger airlines from establishing regular flights. These same low-volume routes, however, may be profitable for another type of carrier.

It is against this background that one must examine the potential for such third level operations in a state such as Montana. One must ask, Can scheduled third level operations operate effectively and efficiently and at a profit?

If one took seriously the comments of some third level operators who have been interviewed, one would say that there is no place in Montana for such service. One such comment was that of an operator questioned about costs who said, "I would not consider any city with less than 100,000 people." If one starts with this kind of restriction, it is clear that there is no room for this kind of a service. However, it seems that these kinds of services have something to offer in two specific kinds of markets. The first is the high density short-haul market between specific city pairs, and the other is in the area of sparsely populated markets. The materials that follow are intended to answer in part the question of the economic feasibility of commuter air route operating in Montana.

The question of what commuter airlines may have to offer the air transportation system in Montana must first be examined from a service and economic point of view. This problem has been approached by the establishment of a system of routes for possible operation throughout Montana with specific service problems in mind.

The problems considered in the evaluation and establishment of a system of routes are:

1. The need of service to the Eastern Montana cities of Lewistown, Havre, Glasgow, Wolf Point, Sidney, Glendive, and Miles City.

2. The need for increased frequency of service to a rapidly expanding market at Kalispell.

3. The need to link more of Montana's cities directly with the capitol city of Helena.

These problems are identified and discussed earlier in this report.

It was necessary to examine this system from the cost and revenue side to determine economic feasibility as well as from the point of view of adding or providing service to the communities involved. It is fully recognized that Frontier Airlines now serves the seven Eastern Montana cities and that Air West is providing service into the Kalispell/ Great Falls market.

The commuter routes, as defined in this analysis, assume that the commuter airline is the only one operating in the seven cities of Eastern Montana. This is assumed for analytical purposes only, primarily because there was no way to isolate or identify a specific schedule that Frontier Airlines would be operating. It should be recognized that this kind of a route system could be developed by Frontier Airlines or any other new carrier such as a commuter or third level operator. It should also be recognized that it would be possible, with careful scheduling and cooperation, to develop a commuter system which could effectively operate as an additional service in these markets, without assuming a full replacement of existing service. The only reason for assuming the commuter as the only operator in this market was for ease in designing schedules and performing the economic analysis. The replacement of Frontier's present service is not being suggested by T.A.P., the Montana Aeronautics Commission, or Frontier Airlines. *No such suggestion or recommendation is being made.* The analysis is intended to examine as objectively as possible the future role of commuter service in serving routes in Montana. This could be done in connection with carriers such as Air West and Frontier. It is suggested, however, that improved service is needed to the seven Eastern Montana cities and the Kalispell market if they are to be expected to develop to their full potential.

The pattern of service development has some very specific goals in mind. One of these major goals is to increase frequency and timing of service to the seven Eastern Montana cities. All of these cities, with the exception of Lewistown, have in the past been served by only one frequency each way per day, which in our judgment is not sufficient service to truly test the potential of these markets. It is commonly recognized throughout the airline industry, that one round trip per day is not adequate to allow for a true test of market potential or to meet the minimum convenience and necessity of the public.

This problem is complicated because most of these markets are in the "use-it-or-lose-it" category. In fact, this area of Eastern Montana has one of the highest concentrations, or clusters of cities still remaining in that category. Nationally, thirty-three cities were in the category of

"use-it-or-lose-it" in 1967 and five of these were in Eastern Montana. In addition it is difficult to force more service of the kind being offered with large equipment when present routes are on a subsidized, "use-it-or-lose-it" basis.

Recent actions and position statements by the Civil Aeronautics Board clearly indicate that there is a trend away from subsidy to airlines, which, in the view of some people within the airline industry, places the small markets in a vulnerable position. There has also been a tendency for the Civil Aeronautics Board to encourage third level and commuter operations.

An examination of these Eastern Montana cities clearly indicates that their prime need in terms of air service is a direct linkage to the cities of Great Falls and Billings. This is thus considered as the most important single item in the development of a route system to serve these cities.

The linkage to Great Falls and Billings is important for two reasons. The first, is that Billings and Great Falls serve as the major wholesale/retail trade centers for these seven Eastern Montana cities. The Upper Midwest Economic Study group classifies Great Falls and Billings as the only two primary wholesale/retail trade centers in Montana. Six cities east of Billings and Great Falls (Lewistown, Havre, Glasgow, Sidney, Glendive, and Miles City) are classified as complete shopping centers. Wolf Point is classified as a partial shopping center. It is clear then, that a considerable community of interest exists between Billings and Great Falls and each of these smaller cities in Eastern Montana. Additional support for this conclusion is established in earlier sections of this report.

It is also evident that Great Falls and Billings have emerged as the major hubs for air transportation for the seven Eastern Montana cities. It is clearly evident from Table 4:2 that Billings and Great Falls serve as terminal cities or as rotating points for airline connections. For example, fifty to seventy-five percent of the Frontier Airline traffic from the seven Eastern Montana cities terminated in Great Falls or Billings. In other words, fifty to seventy-five percent of the traffic either uses these two cities as a beginning or an ending point for their journey or as a connecting point for other airlines or other Frontier flights.

Civil Aeronautics Board origin and destination statistics for the third quarter of 1967 also show that well over half of the traffic uses Great Falls or Billings as a connecting point or termination point. Nearly all of the traffic

Table 4:2. Percentage of Traffic Terminating Within Frontier's System in 1966 for Eastern Montana Cities*

	Billings	Denver	Great Falls	Minot	Salt Lake City	Other
Wolf Point (789)	14.45%	-	51.46%	3.68%	15.97%	14.44%
Sidney (1609)	52.21%	2.30%	17.22%	.19%	15.23%	12.85%
Lewistown (1926)	28.19%	11.01%	22.38%	.57%	27.31%	10.54%
Havre (927)	15.96%	4.64%	49.40%	2.05%	8.20%	19.75%
Glendive (952)	64.49%	4.83%	.63%	3.15%	17.33%	9.57%
Miles City (1559)	61.83%	3.46%	.71%	1.48%	24.69%	7.83%
Glasgow (2587)	9.43%	7.46%	48.85%	6.80%	17.62%	9.84%

*Source: Frontier Airlines data.

flowing in an east/west direction used either Great Falls or Billings as a connection point. The origin and destination statistics show that fewer passengers use it as a connecting point to the south. But, this is primarily because southern connections are made with other Frontier flights from Billings and Great Falls to Salt Lake City and Denver, or that in-state Frontier flights often continue on directly to these southern points. It is clear from existing data that people from these seven Eastern Montana cities use Great Falls and Billings as their points of departure for at least seventy-five to eighty percent of their out-of-state travel.

From the above material concerning the importance of Billings and Great Falls as air terminals and as major

wholesale/retail trade centers, it is concluded that any system designed for service to the Eastern Montana cities should provide morning and evening service from each of the seven Eastern Montana cities to and from Great Falls and Billings. This, then, became a prime consideration in the establishment of possible service patterns.

Another important need is to provide one-carrier-direct service to the capitol city of Helena from these Eastern Montana points. It is clear, as stated earlier, that the air service system of Montana now makes service from these points to Helena possible only when schedules happen to coincide between Frontier Airlines and Northwest or Western at Great Falls or Billings. To date, cooperative schedule planning has not been attempted by the three carriers involved.

In addition to meeting the requirements of Eastern Montana cities, routes were included which would provide improved service in the Kalispell/Great Falls market. Kalispell is a rapidly expanding market and is likely to respond significantly to improved service. Thus, morning and evening frequencies were included in the Kalispell/Great Falls market. It again should be fully recognized that these schedules would need to be examined at the time of implementation to coincide with the schedules of Air West Airlines serving in this market. The schedules provided for are not assumed to replace existing service.

The Example Commuter System Tested

An example of a third level carrier system which would serve to meet the air service needs outlined here is discussed in the following pages. It has been assumed in the development of this system, that the cities of Great Falls and Billings will serve as terminal points for the routing. At each of these points will be located hangars and equipment sufficient for storing and servicing the planes. All planes will leave either Great Falls or Billings on their first flight in the morning and will terminate their last flight in the evening in one of these cities.

Four planes are to be used in the system, each plane flying either three or four flights per day. The total daily use of each plane averages approximately twelve hours, with the four planes flying a total of 48.1 hours daily. A summary of the proposed flights and flight times is included in Table 4:3. Table 4:4 is a summary of the routes flown by each plane and the total flight time per plane. The system is designed so that each plane may be rotated

Table 4:3. Summary of Commuter Routes Flown by Each Airplane

	Departure		Arrival		Flight Time
			AIRPLANE A		
F-1	Billings 6:30 A	-	Great Falls 10:59 A	(269 min.)	
F-6	Great Falls 11:20 A	-	Great Falls 2:34 P	(194 min.)	12.3 hrs.
F-13	Great Falls 5:20 P	-	Great Falls 9:56 P	(276 min.)	
			AIRPLANE B		
F-2	Great Falls 6:34 A	-	Great Falls 11:10 A	(276 min.)	
F-7	Great Falls 11:30 A	-	Billings 4:50 P	(197 min.)	12.4 hrs.
F-12	Billings 5:00 P	-	Great Falls 9:29 P	(269 min.)	
			AIRPLANE C		
F-3	Great Falls 7:30 A	-	Billings 11:59 A	(269 min.)	
F-8	Billings 12:10 P	-	Billings 3:10 P	(178 min.)	13.7 hrs.
F-10	Billings 3:21 P	-	Great Falls 5:10 P	(109 min.)	
F-14	Great Falls 5:30 P	-	Billings 9:59 P	(269 min.)	
			AIRPLANE D		
F-4	Billings 7:50 A	-	Billings 10:34 A	(138 min.)	
F-5	Billings 10:50 A	-	Billings 12:58 P	(128 min.)	9.7 hrs.
F-9	Billings 1:15 P	-	Great Falls 3:04 P	(109 min.)	
F-11	Great Falls 3:51 P	-	Billings 9:04 P	(207 min.)	
			TOTAL FLIGHT TIME		48.1 hrs.

Table 4:4. Summary of Flights and Their Respective Flight Times and Total Time Per Flight

Flight No.	Departure Time	Arrival Time	Flight Time: Air Time + 10 min. Intermediate Stations	Total Time: Flight Time + Hold-over Time + 15 min. at Each Terminal
1	6:30 A	10:59 A	269 min.	299 min.
2	6:34 A	11:10 A	276 min.	306 min.
3	7:30 A	11:59 A	269 min.	299 min.
4	7:50 A	10:34 A	138 min.	194 min.
5	10:50 A	12:58 P	128 min.	158 min.
6	11:20 A	2:34 P	194 min.	224 min.
7	11:30 A	4:50 P	197 min.	350 min.
8	12:10 P	3:10 P	178 min.	210 min.
9	1:15 P	3:04 P	109 min.	139 min.
10	3:21 P	5:10 P	109 min.	139 min.
11	3:51 P	9:04 P	207 min.	343 min.
12	5:00 P	9:29 P	269 min.	299 min.
13	5:20 P	9:56 P	276 min.	306 min.
14	5:30 P	9:59 P	269 min.	299 min.
			2888 min.	3565 min.
			(48.1 hr.)	(59.4 hr.)

through the schedule every four days in order to avoid excess depreciation of any one plane.

The proposed system consists of three groups of flights. One group provides service to the Eastern Montana cities of Miles City, Glendive, Sidney, Wolf Point, Glasgow, and Havre. Four flights a day are routed through these cities. In the morning, a plane leaves Great Falls for Billings via the high-line and low-line cities and another plane leaves Billings for Great Falls flying the opposite pattern. This same pattern is flown again in the evening.

The second group of flights provides service to Central Montana. Emphasis is directed mainly at the cities of Great Falls, Lewistown, and Billings. Flights routed through these cities, however, continue on, in some cases, to the cities of Glasgow, Helena, or Kalispell. Flights 2 and 13, for example, leave Great Falls and are routed to Kalispell and back before flying to Billings and back via Lewistown. Flight 8 flies Billings, Lewistown, Helena and returns in mid-day, while Flights 4 and 11 connect Billings with Glasgow. These last two flights are routed to connect in Glasgow with the morning and evening high-line flights. The cities of Sidney and Wolf Point are thus effectively served with four flights per day to Billings, two via Glasgow and two via Glendive and Miles City.

The third group of flights is designed to serve Western Montana, the main purpose being to extend those flights serving Eastern and Central Montana to the markets of Bozeman, Helena, and Missoula. Emphasis is placed primarily on the Helena market with Bozeman and Missoula serving as stopping points for flights to and from Billings and Kalispell respectively. This group of flights serves the Kalispell/Great Falls and Kalispell/Missoula markets in addition to the two flights shown in the Central Montana schedule connecting Kalispell with Great Falls.

There are two flights scheduled from Billings to Helena and on to Great Falls. These are Flights 9 and 10. Each of these flights originate in mid- to late-afternoon and stop in Bozeman as well as Helena. Flight 5 also serves this Billings/Helena market by providing a non-stop from Billings to Helena in late morning. One flight, essentially in reverse of this, is also scheduled, leaving Great Falls at 11:30 a.m. and arriving in Helena at 11:53 a.m. Thus, each of the six Eastern Montana cities may reach Helena by noon either via Great Falls or Billings.

This Great Falls/Helena flight (Flight 7) also serves the Missoula market by continuing directly on to Missoula and returning to Helena. The plane then remains in Helena

for two hours before flying to Bozeman and Billings in time to directly connect with the Billings/low-line evening flight. Efficient service from Helena to the Central and Eastern Montana cities is thus provided in late afternoon.

The one remaining flight scheduled in this proposed system is routed out of Great Falls at 11:20 in the morning, proceeds to Kalispell, Missoula and back again, arriving in Great Falls at 2:34 in the afternoon. The flight from Kalispell to Missoula is designed to connect with that from Missoula to Helena, giving one-stop service to the capitol city from the Kalispell area.

A total of fourteen flights constitute this third level carrier system for Montana. It is believed that this system effectively meets the Eastern Montana service needs to the cities of Billings, Great Falls, and Helena as well as the needs of the Kalispell/Great Falls market. The system is designed to operate efficiently in terms of airplane usage. The planes are scheduled to fly from as early as 6:30 a.m. to as late as 9:59 p.m. During this fifteen and one-half hours, each plane averages twelve hours of flight time. It has also been the aim of this system to make direct connections for as many in-state markets as possible. It is possible in many instances to fly between two very distant points within the State by making direct on-line connections within this proposed system.

It should also be noted that the out-of-state service needs of the six eastern cities as well as Kalispell and Lewistown have not been overlooked in this system. The schedules have been designed in such a way as to provide service into the cities of Great Falls and Billings by noon, and in some cases earlier, on a daily basis. Even though major air carrier schedules may change from time to time, this routing will allow one to reach nearly any major market point in the United States by evening. Similarly, these cities can be reached by evening from nearly any major market in the United States. Evening flights leave Great Falls and Billings for these Montana cities no earlier than 5:00 p.m. Tables 4:5, 4:6, and 4:7 show the proposed flight schedules for Eastern, Central and Western Montana respectively as explained above.

The third level carrier system as outlined does much to improve service to the cities involved. As mentioned previously, the six Eastern Montana cities of Miles City, Glendive, Sidney, Wolf Point, Glasgow, and Havre have in the past years been served only by one frequency each way per day. Combs Airways added one daily round trip through Miles City, Sidney, and Glendive in the summer of 1968. The Combs Airways service will provide the only service

Table 4:5. Flight Schedules for Eastern Montana, Third Level Carrier Service

City	(Read Down) F-1	F-12	(Read Up) F-3	F-14	
BILLINGS	Lv. 6:30 A	5:00 P	11:59 A	9:59 P	Ar.
MILES CITY	Ar. 7:15 A	5:45 P	11:14 A	9:14 P	Lv.
	Lv. 7:25 A	5:55 P	11:04 A	9:04 P	Ar.
GLENDIVE	Ar. 7:50 A	6:20 P	10:39 A	8:39 P	Lv.
	Lv. 8:00 A	6:30 P	10:29 A	8:29 P	Ar.
SIDNEY	Ar. 8:15 A	6:45 P	10:14 A	8:14 P	Lv.
	Lv. 8:25 A	6:55 P	10:04 A	8:04 P	Ar.
WOLF POINT	Ar. 8:48 A	7:18 P	9:41 A	7:41 P	Lv.
	Lv. 8:58 A	7:28 P	9:31 A	7:31 P	Ar.
GLASGOW	Ar. 9:15 A	7:45 P	9:14 A	7:14 P	Lv.
	Lv. 9:25 A	7:55 P	9:04 A	7:04 P	Ar.
HAVRE	Ar. 10:14 A	8:44 P	8:15 A	6:15 P	Lv.
	Lv. 10:24 A	8:54 P	8:05 A	6:05 P	Ar.
GREAT FALLS	Ar. 10:59 A	9:29 P	7:30 A	5:30 P	Lv.

Table 4:6. Flight Schedules for Central Montana, Third Level Carrier Service

City	(Read Down) F-2		City	(Read Down) F-8
GREAT FALLS	Lv. 6:34 A	5:20 P	BILLINGS	Lv. 12:10 P
KALISPELL	Ar. 7:23 A	6:09 P	LEWISTOWN	Ar. 12:42 P
	Lv. 7:33 A	6:19 P		Lv. 12:52 P
GREAT FALLS	Ar. 8:22 A	7:08 P	HELENA	Ar. 1:34 P
	Lv. 8:32 A	7:18 P		Lv. 1:46 P
LEWISTOWN	Ar. 9:04 A	7:50 P	LEWISTOWN	Ar. 2:28 P
	Lv. 9:14 A	8:00 P		Lv. 2:38 P
BILLINGS	Ar. 9:46 A	8:32 P	BILLINGS	Ar. 3:10 P
	Lv. 9:56 A	8:42 P		
LEWISTOWN	Ar. 10:28 A	9:14 P		
	Lv. 10:38 A	9:24 P		
GREAT FALLS	Ar. 11:10 A	9:56 P		

	F-4	F-11
GREAT FALLS	Lv. --	3:51 P
BILLINGS	Ar. --	4:50 P
	Lv. 7:50 A	5:50 P
GLASGOW	Ar. 8:54 A	6:54 P
	Lv. 9:30 A	8:00 P
BILLINGS	Ar. 10:34 A	9:04 P

Table 4:7. Flight Schedules for Western Montana Third Level Carrier Service

City	(Read Down) F-7	F-5	City	(Read Down) F-6
GREAT FALLS	Lv. 11:30 A		GREAT FALLS	Lv. 11:20 A
HELENA	Ar. 11:53 A Lv. 12:03 P		KALISPELL	Ar. 12:09 P Lv. 12:19 P
MISSOULA	Ar. 12:37 P Lv. 1:02 P		MISSOULA	Ar. 12:52 P Lv. 1:02 P
HELENA	Ar. 1:36 P Lv. 3:34 P		KALISPELL	Ar. 1:35 P Lv. 1:45 P
BOZEMAN	Ar. 3:57 P Lv. 4:07 P		GREAT FALLS	Ar. 2:34 P
BILLINGS	Ar. 4:50 P Lv.	10:50 A		
HELENA	Ar. Lv.	11:49 A 11:59 A		
BILLINGS	Ar.	12:58 P		

	F-9	F-10
BILLINGS	Lv. 1:15 P	3:21 P
BOZEMAN	Ar. 1:58 P Lv. 2:08 P	4:04 P 4:14 P
HELENA	Ar. 2:31 P Lv. 2:41 P	4:37 P 4:47 P
GREAT FALLS	Ar. 3:04 P	5:10 P

to the cities of Glendive and Sidney until such time as the airports of these cities are improved to accomodate Convair 580 aircraft.

The city of Lewistown also has only one scheduled flight each way per day, although it has been served with more than one round trip service in the past. In Kalispell, Air West provides one round trip service flying east at noon and west in the afternoon. Kalispell is also provided with a flight to and from Missoula and Spokane by Commute Air.

It is obvious from this brief discussion, that existing service in these eight Montana cities is very limited. Not only does in-state air transportation suffer, but also out-of-state. It was noted previously that existing schedules are not designed so that people in these Montana cities can travel to or from major out-of-state markets in a day's time. If connections are made, they are made purely by coincidence.

To better analyze the example commuter system and to compare it with existing service, it is advantageous to look at each of the eight cities concerned. Information for each city is summarized in Tables 4:8 through 4:11. Routes between each city and Great Falls, Billings, and Helena are outlined, as well as departure time, arrival time, number of stops, number of connections, and flight time. The first time shown in the table represents departure time and the second arrival time. The first number within the parentheses indicates the number of intermediate stops made, the second indicates the number of on-line connections, and the third represents the total elapsed time involved.

In summary, with this proposed system service is in most cases more than doubled between Billings, Great Falls, and these eight cities. The routes are purposely structured to provide early morning and late afternoon service to these major air hubs as well as providing usable service to Helena.

An assessment of the problem from the economic point of view now becomes the issue. In the following section, the cost structure of this particular system will be analyzed. When contrasted with expected revenue, the economic feasibility of the system will become apparent.

Table 4:8. Third Level Carrier Service: Miles City, Glendive

MILES CITY

To Great Falls	7:25 A - 10:59 A (5-0-3:34)	From Great Falls	3:51 P - 5:45 P (1-1-1:54)
To Billings	11:14 A - 11:59 A (0-0-0:45) 9:14 P - 9:59 P (0-0-0:45)	From Billings	6:30 A - 7:15 A (0-0-0:45) 5:00 P - 5:45 P (0-0-0:45)
To Helena	11:14 A - 1:34 P (2-0-2:20)	From Helena	3:34 P - 5:45 P (2-0-2:11)

GLENDIVE

To Great Falls	8:00 A - 10:59 A (4-0-2:59) 6:30 P - 9:29 P (4-0-2:59)	From Great Falls	7:30 A - 10:29 A (4-0-2:59) 3:51 P - 6:20 P (2-1-2:29) 5:30 P - 8:29 P (4-0-2:59)
To Billings	10:39 A - 11:59 A (1-0-1:20) 8:39 P - 9:59 P (1-0-1:20)	From Billings	6:30 A - 7:50 A (1-0-1:20) 5:00 P - 6:20 P (1-0-1:20)
To Helena	10:39 A - 1:34 P (3-0-2:55)	From Helena	3:34 P - 6:20 P (3-0-2:46)

Table 4:9. Third Level Carrier Service: Sidney, Wolf Point

SIDNEY

To Great Falls	8:25 A - 10:59 A (3-0-2:34) 6:55 P - 9:29 P (3-0-2:34)	From Great Falls	7:30 A - 10:04 A (3-0-2:34) 3:51 P - 6:45 P (3-1-2:54) 5:30 P - 8:04 P (3-0-2:34)
To Billings	8:25 A - 10:34 A (2-1-2:09) 10:14 A - 11:59 A (2-0-1:45) 6:55 P - 9:04 P (2-1-2:09) 8:14 P - 9:59 P (2-0-1:45)	From Billings	6:30 A - 8:15 A (2-0-1:45) 7:50 A - 10:04 A (2-1-2:14) 5:00 P - 6:45 P (2-0-1:45) 5:50 P - 8:04 P (2-1-2:14)
To Helena	8:25 A - 11:49 A (3-1-3:24) 10:14 A - 1:34 P (4-0-3:20)	From Helena	3:34 P - 6:45 P (4-0-3:11) 4:37 P - 8:04 P (4-0-3:27)

WOLF POINT

To Great Falls	8:58 A - 10:59 A (2-0-2:01) 7:28 P - 9:29 P (2-0-2:01)	From Great Falls	7:30 A - 9:31 A (2-0-2:01) 5:30 P - 7:31 P (2-0-2:01)
To Billings	8:58 A - 10:34 A (1-1-1:36) 9:41 A - 11:59 A (3-0-2:18) 7:28 P - 9:04 P (1-1-1:36) 7:41 P - 9:59 P (3-0-2:18)	From Billings	6:30 A - 8:48 A (3-0-2:18) 7:50 A - 9:31 A (1-1-1:41) 5:00 P - 7:18 P (3-0-2:18) 5:50 P - 7:31 P (1-1-1:41)
To Helena	8:58 A - 11:49 A (2-1-2:51)	From Helena	4:47 P - 7:31 P (3-0-2:44)

Table 4:10. Third Level Carrier Service: Glasgow, Havre

GLASGOW

To Great Falls	9:25 A - 10:59 A (1-0-1:34) 7:55 P - 9:29 P (1-0-1:34)	From Great Falls	7:30 A - 9:04 A (1-0-1:34) 5:30 P - 7:04 P (1-0-1:34)
To Billings	9:30 A - 10:34 A (0-0-1:04) 8:00 P - 9:04 P (0-0-1:04)	From Billings	7:50 A - 8:54 A (0-0-1:04) 5:50 P - 6:54 P (0-0-1:04)
To Helena	9:30 A - 11:49 A (1-0-2:19)	From Helena	4:47 P - 7:04 P (2-0-2:17)

HAVRE

To Great Falls	10:24 A - 10:59 A (0-0-0:35) 8:54 P - 9:29 P (0-0-0:35)	From Great Falls	7:30 A - 8:05 A (0-0-0:35) 5:30 P - 6:05 P (0-0-0:35)
To Billings	8:15 A - 10:34 A (1-1-2:19) 6:15 P - 9:04 P (1-1-2:49)	From Billings	7:50 A - 10:14 A (1-1-2:24) 5:50 P - 8:44 P (1-1-2:54)
To Helena	10:24 A - 11:53 A (1-1-1:29)	From Helena	4:47 P - 6:05 P (1-0-1:18)

Table 4:11. Third Level Carrier Service: Kalispell, Lewistown

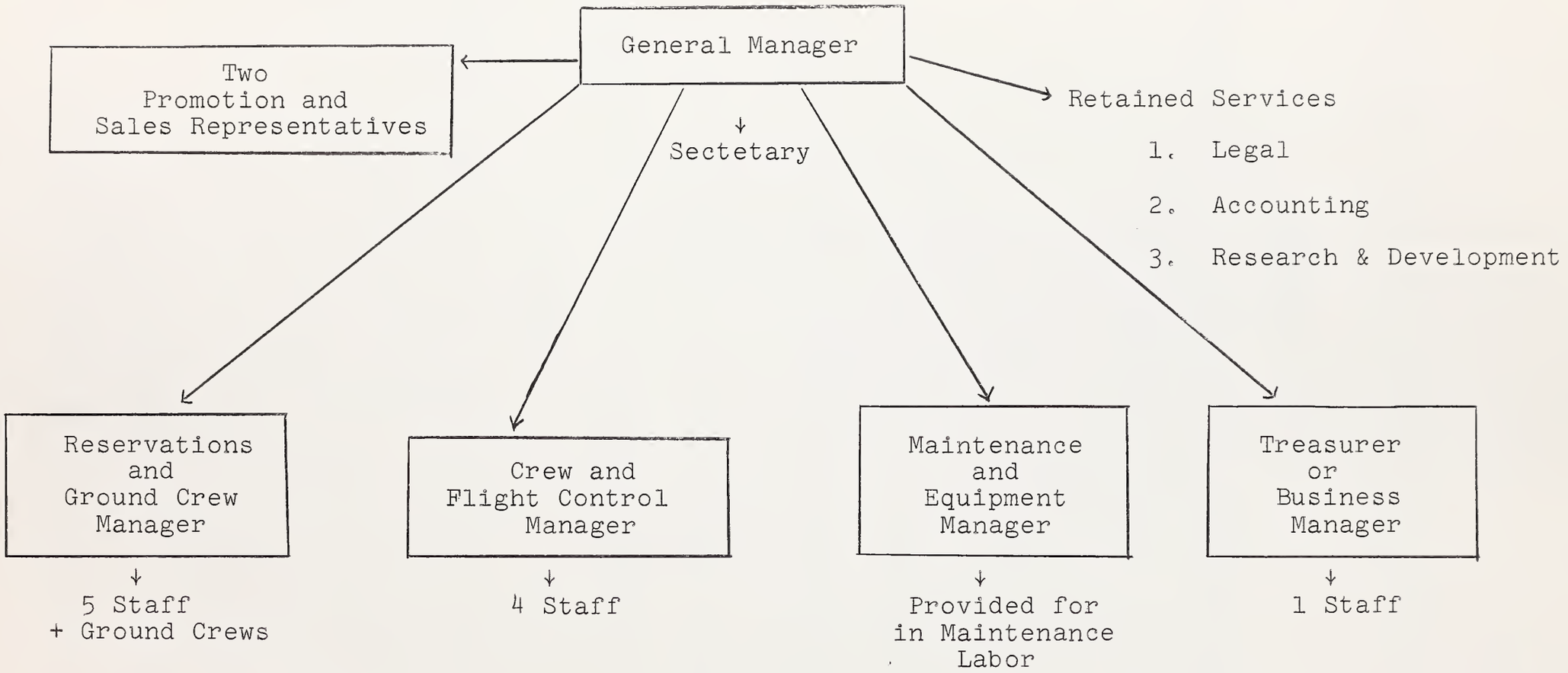
KALISPELL

To Great Falls	7:33 A - 8:22 A (0-0-0:49) 1:45 P - 2:34 P (0-0-0:49) 6:19 P - 7:08 P (0-0-0:49)	From Great Falls	6:34 A - 7:23 A (0-0-0:49) 11:20 A - 12:09 P (0-0-0:49) 5:20 P - 6:09 P (0-0-0:49)
To Billings	7:33 A - 9:46 A (2-0-2:13) 6:19 P - 8:32 P (2-0-2:13)	From Billings	9:56 A - 12:09 P (2-1-2:13) 3:21 P - 6:09 P (3-1-2:48)
To Helena	12:19 P - 1:36 P (1-1-1:17)	From Helena	12:03 P - 1:35 P (1-1-1:32) 4:47 P - 6:09 P (1-1-1:22)
To Missoula	12:19 P - 12:52 P (0-0-0:33)	From Missoula	1:02 P - 1:35 P (0-0-0:33)

LEWISTOWN

To Great Falls	10:38 A - 11:10 A (0-0-0:32) 9:24 P - 9:56 P (0-0-0:32)	From Great Falls	8:32 A - 9:04 A (0-0-0:32) 7:18 P - 7:50 P (0-0-0:32)
To Billings	9:14 A - 9:46 A (0-0-0:32) 8:00 P - 8:32 P (0-0-0:32)	From Billings	9:56 A - 10:28 A (0-0-0:32) 8:42 P - 9:14 P (0-0-0:32)
To Helena	12:52 P - 1:34 P (0-0-0:42)	From Helena	1:46 P - 2:28 P (0-0-0:42)

Figure 4:1. Management and Organizational Structure Assumed for Budgeting Costs on Proposed Commuter Routes.



Assumptions Basic to Projected Costs

The costs are broken down into two categories: variable costs or direct operating expenses and the fixed costs or indirect operating expenses. These expenses are budgeted for the entire system of routes as explained previously in this chapter.

The de Havilland Twin Otter, Series 300 is used in budgeting model commuter routes for the following three reasons:

1. This aircraft has been used consistently in this kind of service, and its capability is well established.

2. Because of this, operational cost data were more readily available, making it more reliable than data for other similar aircraft.

3. For the circuitous routes being budgeted, its capacity of nineteen passengers is considered adequate.

The budgeting of the Twin Otter is in no way meant to imply that no other aircraft would be suitable for third level operations in Montana. In fact, others might serve equally as well or even better. Faster aircraft with slightly less useful weight are now being used in third level or commuter operations in other parts of the country. These aircraft should be evaluated as meaningful alternatives to the Twin Otter. In addition, many manufacturers are now working on design and development of aircraft to compete in this market.

Figure 4:1, on the preceding page, illustrates the management and back-up personnel structure required. A fleet of five airplanes is used - four planes operating through the system, and a fifth one used as a back-up plane. The full cost of the five airplanes is presented in the projected or estimated costs. The assumptions behind the cost structure are as outlined below for all fixed costs.

Reservations:

1. 5 Staff @ $5,000/year plus fringe benefits.

2. Central Reservations Office manned from 5 a.m. to 12 p.m. daily.

3. $600/month for WATS phone system.

4. $150/month for other phone expenses.

Promotion & Sales:

1. 2 Sales Representatives in 2 different cities to travel the system @ $7,200/year plus fringe benefits.

2. $2,000 per man for expenses associated with travel.

3. Advertising Budget of $75/month for each of 13 cities except Great Falls and Billings.

4. Advertising Budget of $150/month for Great Falls and Billings.

Crew & Flight Control:

1. 4 men @ $7,500/year plus 10% fringe benefits.

General Business Office:

1. 2 Staff at $5,000/year plus 10% fringe benefits.

2. Office rental, supplies, and misc. overhead at $2,000/month.

Ground Crew:

1. $665/month for ground crews at Great Falls and Billings with office open from 5 a.m. to 12 p.m.

2. An allocation for contract in other cities for 1 hr. of ground crew time per landing at $5.00 per hour. This would be contracted directly with ground personnel.

Management Personnel:

1. One General Manager - $20,000/year.

2. One Reservation & Ground Crew Manager - $12,000/year

3. One Maintenance & Equipment Manager - $12,000/year.

4. One Crew & Flight Control Manager - $12,000/year.

5. Treasurer or Business Manager - $12,000/year.

6. Fringe Benefits at 10% of Salaries & Wages.

Real Estate and Personal Property Taxes:

1. Tax rate applied to average investment in airplanes, spare parts inventories, and hangar facilities as generally assumed applicable as supplied by operators out of Billings, Montana, 1968.

Depreciation:

1. Salvage value of 10-year-old airplane - $80,000.

2. New Cost - $400,000.

3. Life expectancy of aircraft equals 10 years.

4. New cost of 2 fully equipped hangar facilities of 30,000 sq. ft. each equals $450,000.

5. Life expectancy of hangars - 20 years.

6. Salvage value of hangars equal to zero.

Interest Costs:

1. Interest rate assumed at 7 percent.

2. Interest figured on average value of airplanes which is assumed equal to one-half of new cost.

3. Interest figured on average value of hangars which is again assumed equal to one-half of new cost.

4. Interest on a $60,000 - average spare parts inventory for the fleet of five airplanes.

Insurance Costs:

1. Insurance rate taken at 4 percent of total investment in aircraft.

Replacement Parts and Direct Hangar Expenses:

1. Direct hangar expenses - $750/month.
2. Spare parts allowance of $60,000 used per year.

Retained Professional Services in areas of Legal, Accounting, and Research and Development:

1. $20,000/year.

Landing Fees:

1. Assume 80 landings/day.
2. Six cents per 1000 pounds.
3. Average weight of plane - 12,500 pounds.

Assumptions basic to variable or direct operating costs which are a function of flight hours are shown as follows by category.

Crew Costs:

1. $10/hour for pilot.
2. $7/hour for co-pilot.
3. A rate of $15/night allowed for crew away from home.
4. 2 crew members away from home one night in 12 hours of flight time - $2.50/hour of flight time for crew expenses.

Fuel and Oil Costs:

1. Oil costs $.75/hour.
2. Petroleum costs $.25/gallon.
3. Average consumption - 100 gallons/hour.
4. Fuel and oil costs $25.75/hour flight time.

Maintenance:

1. One hour maintenance assumed per hour flight time.

2. Rate of maintenance assumed equal to $3.50/ hour.

Overhaul Costs:

1. Overhauls assumed to cost $10,000/engine.

2. Overhauls performed on the average of every 2000 hours.

The information used for the costs estimates were compiled from several sources. The costs and operational material supplied by de Havilland Aircraft of Canada, Ltd., was checked in detail with operators using the Series 200 Twin Otter aircraft. The two major companies consulted were Pilgrim Airlines of New London, Connecticut, and Commuter Air of Cleveland, Ohio, both of which have used the plane extensively. The costs or rates applied were then adjusted to reflect the local conditions of Montana as closely as possible. This was accomplished primarily by interview with operators in the area.

All of the variable costs are expressed as a cost per hour of flight time. Total flight time was calculated as air time figured at an average rate of 180 miles per hour plus ten minutes at each intermediate station. Table 4:4, on page 185, shows the total time per flight assumed in the system.

The costs are summarized in Table 4:12. This shows a total cost per hour of flight of $106.23 with $47.48 as fixed expenses and $58.75 in direct variable operating expenses. These costs reflect a normal return to all factors of production including returns to management and capital.

The costs assumed here, and shown in the summary, are certainly changeable depending upon the assumptions made. An example is that it is possible that the system could be expanded some in terms of hours flown and not change many of the fixed operating expenses, thus reducing fixed expenses per hour. This estimated cost of $106.23 per hour is used throughout the remainder of this report as a reasonable estimate upon which to make general statements relative to the economic feasibility of commuter operations in Montana.

Table 4:12. Summary of Operating Expenses

Fixed Operating Expenses:

Reservations	$ 36,500
Promotion & Sales	33,340
Crew & Flight Control	33,000
General Business Office	35,000
Management	74,800
Ground Crew	120,120
Real Estate & Personal Property Taxes	37,480
Depreciation	182,500
Interest on Investment in Hangars, Aircraft, & Equipment	89,950
Insurance	80,000
Replacement Parts & Direct Hangar Expenses	69,000
Retained Legal, Accounting, & Research and Development Costs	20,000
Landing Fees	21,900
TOTAL FIXED EXPENSES	$833,590

$$\frac{\$833,590}{17,557 \text{ hrs.}} = \$47.48 \text{ per hour}$$

Variable Operating Expenses:

Crew Costs	$19.50 per hour
Fuel & Oil Costs	25.75 per hour
Repair & Maintenance	3.50 per hour
Overhaul	10.00 per hour
TOTAL VARIABLE COSTS	$58.75 per hour

Total Expenses:

Per Hour: $106.23

Per Year: $1,865,080

The traffic for each of the seven cities in Eastern Montana is projected independently and as a group assuming the existence of the commuter service outlined earlier in this chapter. This Eastern Montana system would consist of flights which account for a total of 10,585 flight hours per year.[6] Table 4:13 shows a traffic projection for 1970 to 1980 which is based on a definite set of assumptions discussed later in this chapter.

Careful examination of the routes involved in the proposed system shows that in every instance, with the exception of Lewistown, the service improvements have been substantial. It is on the basis of this service pattern that the passenger projections shown in Table 4:13 are made. These traffic projections are not assumed to be realistic unless a service pattern at least comparable to the one proposed is in existence.

In every instance the average traffic for the three year period between July 1, 1965 and June 30, 1968 is used as a basis from which to begin the traffic projection. An upper and lower limit traffic projection is made for each of the cities. The following are the percentage increases expected for each city by 1970:

Glasgow	50% to 100% increase
Lewistown	25% to 75% increase
Sidney	75% to 125% increase
Wolf Point	100% to 150% increase
Miles City	150% to 175% increase
Glendive	150% to 175% increase
Havre	150% to 175% increase

The percentage increases recorded above for each of the cities are upper and lower limit traffic projections for 1970 expressed as a percentage increase over the average yearly traffic between 1965 and 1968. These percentage increases assume the existence of the proposed commuter system discussed above. Also, during this time period there would be some normal growth even with existing service. These growth rates are thus a combination of two factors

---

[6]This assumes flights F-1, F-12, F-3, F-14, F-4, F-11, and parts of F-2 and F-13.

Table 4:13. Traffic Projections 1970, 1975, and 1980 for the Seven Eastern Montana Cities assuming Improved Schedules as Included in Proposed Routes.

City	Average Traffic Per Year July 1965-July 1968*	Projection Limit	Passenger Projections** 1970	1975	1980	Passengers Added Per Year 1970-1980
GLASGOW	5,162	Lower	7,743	8,713	9,679	194
		Upper	10,324	11,614	12,905	258
LEWISTOWN	3,436	Lower	4,295	4,830	5,369	107
		Upper	6,013	6,763	7,516	150
SIDNEY	2,897	Lower	5,070	5,705	6,338	127
		Upper	6,518	7,333	8,148	163
GLENDIVE	1,879	Lower	4,698	5,283	5,872	117
		Upper	5,167	5,812	6,459	129
WOLF POINT	1,848	Lower	3,696	4,156	4,620	92
		Upper	4,620	5,200	5,775	116
MILES CITY	2,932	Lower	7,330	8,245	9,162	183
		Upper	8,063	9,073	10,079	202
HAVRE	1,989	Lower	4,972	5,592	6,215	124
		Upper	5,470	6,155	6,838	137
TOTAL FOR SEVEN CITIES	20,143	Lower	37,804	42,524	47,255	944
		Upper	46,175	51,950	57,720	1155

*Average traffic per year was calculated for the last three fiscal years. This total on and off passengers, as reported by Frontier Airlines, does not correspond with total traffic reported by the Civil Aeronautics Board.

**The number of passengers shown in Passenger Projections for all years is for total on and off traffic.

- normal growth rates and accellerations in traffic growth as a result of more than doubling the service to most cities.

The Lewistown traffic was increased proportionately less than for any of the other cities, primarily because of two important factors. First, its close proximity in terms of driving distance to both of the major air and business hubs of Montana. Second, Lewistown has enjoyed better service in terms of frequency than have any of the other cities throughout the historic time period. It can also be expected that out-of-state travelers from Lewistown will drive to the major air hubs of Great Falls and Billings because of the convenience of flight connections at these points, even with improved service to Lewistown. Service improvements coupled with the normal growth rate were the factors used to arrive at the twenty-five to seventy-five percent increase of 1970 traffic over 1965 to 1968 traffic. Projected trade area population increase in the time period 1960 to 1975 for Lewistown is also relatively small.

Figure 4:2 shows the total trade area population for 1960 and 1975, and the passenger traffic per thousand population in the trade area for the same years, for the seven Eastern Montana cities. The passenger traffic per thousand population in 1960 was calculated by dividing the average traffic of the time period 1965 to 1968 by the trade area population in 1960. The 1975 figure for passenger traffic per thousand population uses the population projection-1 for 1975 as found in Chapter 1 of this report and the 1975 lower limit traffic projection as found in Table 4:13 of this chapter.

The traffic growth at Glasgow is not projected to be as great as for some of the other cities primarily because of the effect of the closure of the Air Force Base. Glasgow has traditionally been a high generator of traffic relative to trade area population. As shown in Figure 4:3, it was the highest for the 1960 period with 302 passengers generated per thousand trade area population. It is apparent that Glasgow suffers more from the isolation factor than does Lewistown, being nearly 300 road miles from either of the major hubs. The traffic projection for Glasgow is at best tenuous due to the indefinite future of the air base facility, which depends upon the results of negotiations concerning alternative uses for the air base. This traffic projection has, however, assumed that whatever use is made of the air base will result in a smaller generation of traffic than was the case in the past.

The traffic projection for Sidney ranges from a seventy-five to a one hundred twenty-five percent increase, or doubling

Figure 4:2. Trade Area Population, 1960 and 1975.

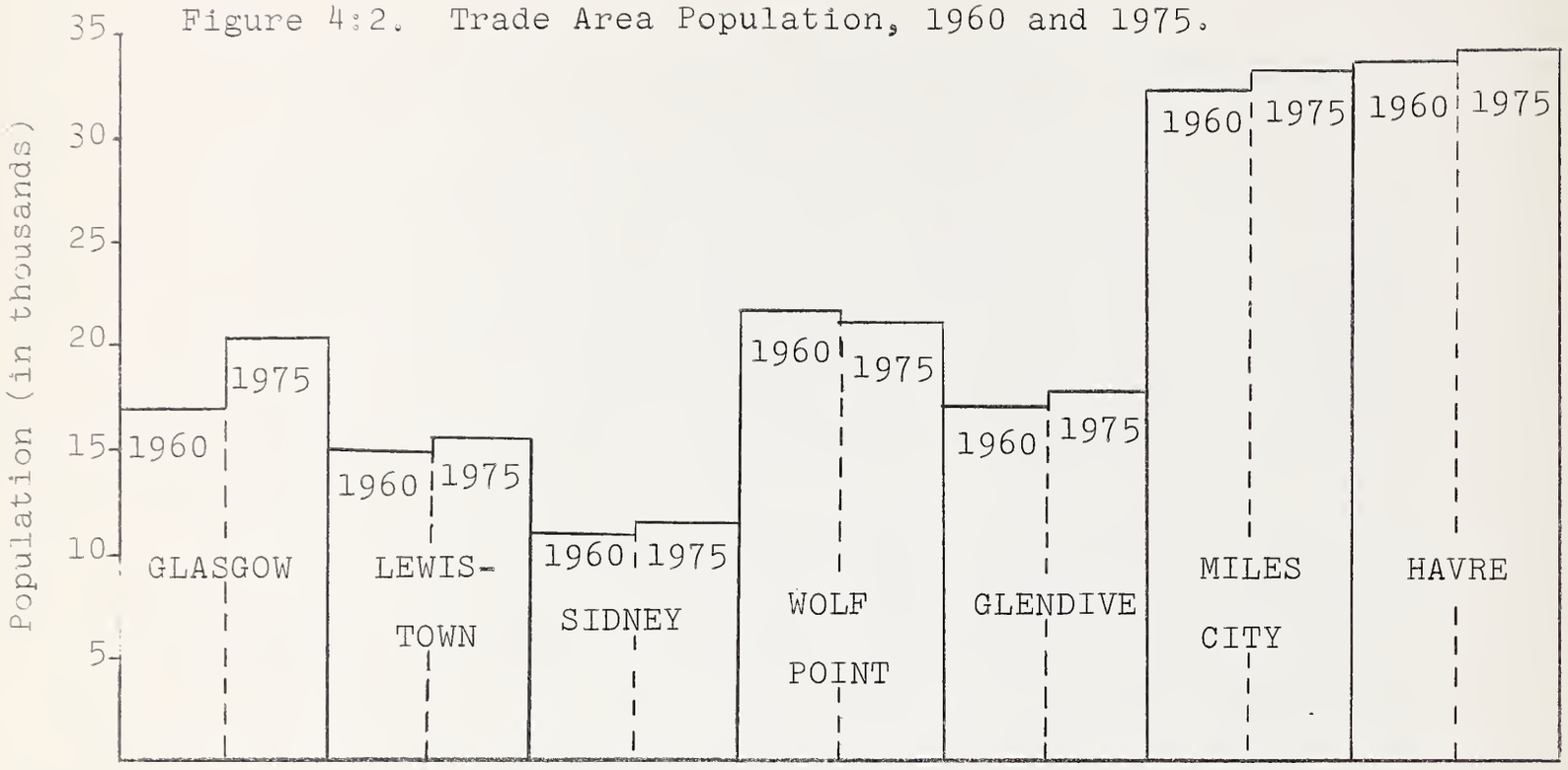
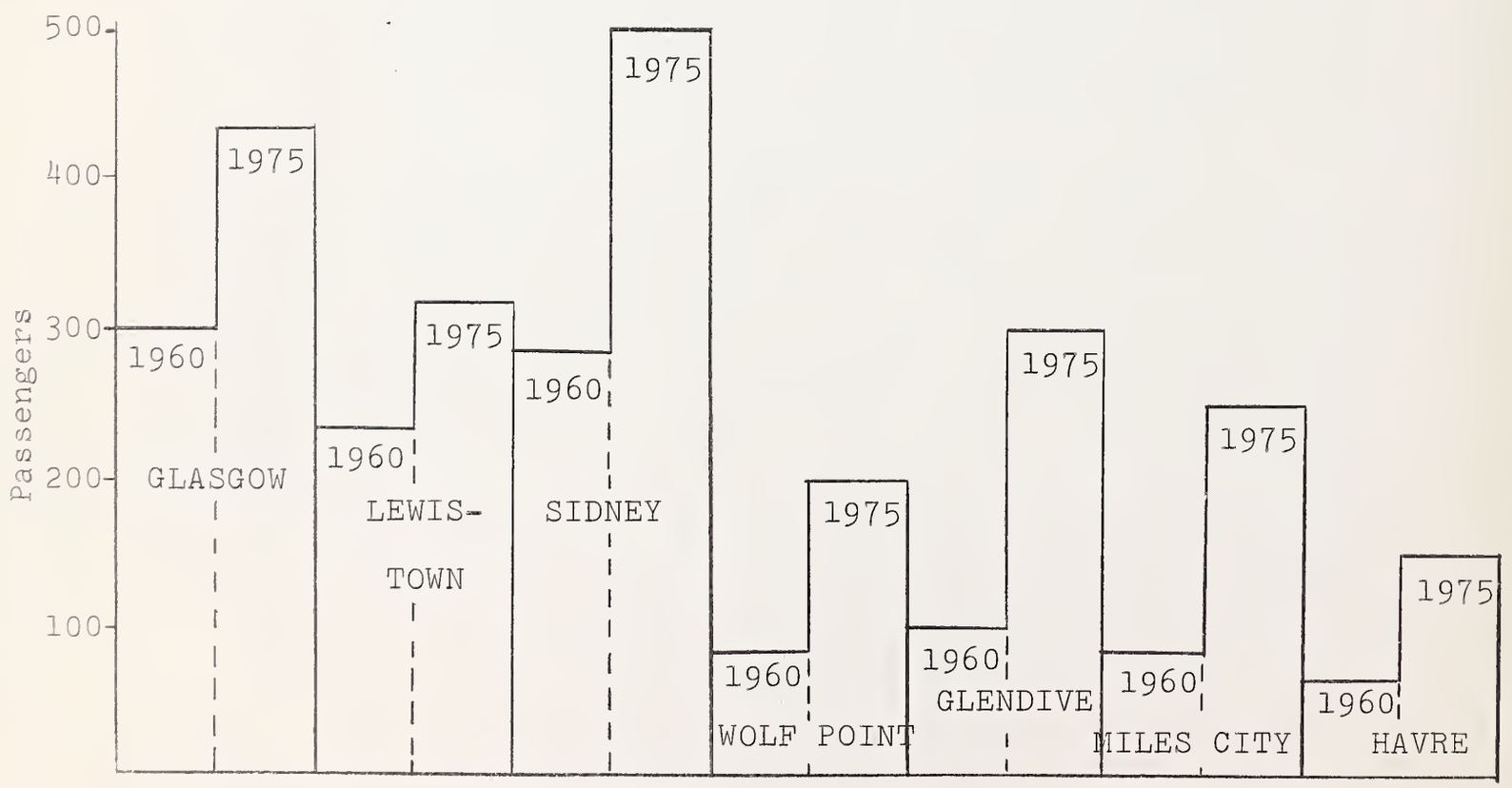


Figure 4:3. Passenger Traffic Per 1000 Population by Trade Area, 1960 and 1975.



of traffic by 1970. This is made primarily on the basis that Sidney has been a strong generator of traffic in the past. A smaller total traffic increase is projected for Sidney than for some other small cities of the area, however, the Sidney trade area is small and traffic per 1,000 population, as projected for 1975, is significantly higher than for any other area. To an extent, Sidney traffic has been forced to use present service despite poor frequency, primarily because of Sidney's isolated location. Sidney is not on any rail passenger routes and has poorer bus service than other comparable cities. Nor is it on a major interstate highway as are the other Eastern Montana cities. The passenger traffic per thousand population for the Sidney trade area in 1960 was 275 passengers, second highest of any of the trade areas. This compares to a hundred or less for the cities of Glendive, Wolf Point, and Miles City. The 1975 traffic forecast predicts an increase to 504 passengers per thousand population in the Sidney trade area.

The service to Wolf Point shows a very significant improvement in the example commuter system because it has alternative routes to Billings, whereas at the present time Wolf Point has no direct service to Billings. Wolf Point traffic is projected to increase 100 to 150 percent by 1970 as a result of service improvements. Wolf Point has had a small market in the past and has recorded a relatively low passenger traffic total per thousand trade area population. This undoubtedly relates to the large Indian population in the trade area and the high rural-urban population ratio. It is believed, however, that this market should at least double as a result of improved service because it presently suffers from severe isolation in terms of communications links with the Billings and Great Falls areas.

The cities of Miles City, Glendive, and Havre are all treated in the same fashion. They are projected to respond to this new service pattern with a growth rate of 150 to 175 percent by 1975.

The cities of Miles City and Havre are both situated relatively close to one of the major hubs. There has been a significant amount of driving to these major hubs to connect with out-of-state flights, rather than flying to make these connections. A count of the reservations cards for Frontier Airlines for the three months of April, May, and June of 1968 revealed that nearly forty-five percent of the reservations made at Havre were for boarding in other stations, while thirty-eight percent of the reservations made at Miles City were boardings at other stations. It is believed that this automobile travel will be significantly

reduced if better air frequency is provided. The factor of boarding at neighboring terminals is also taken into account for other city projections. Table 4:14 shows the percent of total reservations made by Frontier for boarding at other stations. This data was obtained by examination of all reservations cards for the second quarter of 1968 and is reported by city.

Table 4:14. Percent of Total Reservations made for Boarding at other Stations, Frontier Airlines, Second Quarter, 1968

City	Boarding at Other Stations
Havre	44.7%
Miles City	38.0%
Sidney	30.2%
Glendive	21.3%
Lewistown	20.9%
Wolf Point	12.0%
Glasgow	8.2%

This in no way indicates the exact amount of driving to other stations to board. Many reservations are made direct to airlines in other boarding cities. However, it does indicate that automobile connections have been extremely important. This is similar to the situation studied in the Western Montana Service Investigation Case in which automobile connections from Bozeman and Missoula to Butte were an important factor. Monthly sales records of the Lelok Travel Agency in Havre were examined for 1965 and 1966, and revealed that six tickets were sold for boarding in Great Falls for every one sold for boarding in Havre. This again is a clear indication that people are in fact driving or reaching their original air boarding station by means other than air. This can be traced primarily to inadequate frequency and inability to make direct connections.

There has been a petition to remove one of the rail passenger trains serving the Miles City and Glendive area. Hearings have been held regarding this matter and the decision has been postponed. However, it is highly probable that within the next year or two one of the passenger train services through these cities will be terminated. The use of passenger train service in these sparse markets has been on the decline for some time. This is expected to be a contributing factor to increased air traffic activity in Glendive and Miles City.

Glendive is also constructing a new airport facility which was strongly supported in a recent community election. This new facility will undoubtedly be a stimulant to the use of scheduled air services, especially when coupled with improvements in service as projected here. It is also interesting to note that both Miles City and Glendive support junior colleges which should be important factors to air service use in these cities in the future. Havre has had small total traffic as compared to population in the past, but it is assumed that increased frequency will serve to significantly accelerate traffic at Havre. Northern Montana College and Vo-Tech Educational Activities are also important in Havre.

It is now possible to determine the economic feasibility of the commuter system as outlined for Eastern Montana. The assumptions made in costs are as follows:

1. Cost per flight hour equals $106.23.

2. Flight hours per year for the system equal 10,585.

The costs must then be compared to revenue to determine feasibility. Revenue is assumed to be generated from three primary sources as follows:

1. Total origin and destination traffic for the seven Eastern Montana cities.

2. Great Falls/Billings traffic from other points such as Kalispell and for the local traffic between the city pairs.

3. Revenue from air freight in the system.

All fares were based on twelve cents per mile for direct air miles from point to point. This does alter the fare structure which now ranges from nine to fourteen cents per mile. It is found that in nearly every instance the comparison of straight air miles at twelve cents compares very favorably to costs of auto travel by road at ten cents

per mile. Table 4:15 shows the fare and auto cost comparison to Great Falls, Billings, and Helena from each of the seven Eastern Montana cities.

The following are the assumptions relative to estimated revenue for the system:

1. Origin and destination traffic and average fare for city.

Traffic		Fare
9,034	Glasgow	$25.50
5,154	Lewistown	$12.00
5,794	Sidney	$33.00
4,933	Glendive	$28.00
4,185	Wolf Point	$29.50
7,696	Miles City	$20.00
5,221	Havre	$16.50

2. Revenue from the Great Falls/Billings routes carrying approximately three passengers per flight in addition to traffic already accounted for. (This being back-up traffic from such cities as Kalispell and local Great Falls/ Billings traffic.) At present fare levels, this creates revenue of approximately $75,000 per year.

3. Freight hauled expected to slightly more than double (total on and off) with improved service in 1970 over 1967 level for the seven cities to 850,000 pounds, including Great Falls/ Billings freight. At an average of nine cents per pound, a minimum of $80,000 per year will be generated.

4. All air mail, first class mail, and air express income is over and above what is budgeted here. The 1967 levels for the seven cities were as follows in pounds carried.

   Total air mail - 55,214 lbs.
   Total 1st Class - 41,039 lbs.
   Total Air Express - 66,435 lbs.

Table 4:15. Proposed fares as Compared to Costs by Auto from Seven Eastern Montana Cities to Great Falls, Billings, and Helena.

	Direct Air Miles	Proposed Fares	Road Miles	Estimated Auto Cost
		GLASGOW		
Great Falls	228	27.36	271	27.10
Billings	192	23.04	279	27.90
Helena	279	33.48	361	36.10
		HAVRE		
Great Falls	106	12.72	112	11.20
Billings	200	24.00	300	30.00
Helena	171	20.52	202	20.20
		WOLF POINT		
Great Falls	276	33.12	320	32.00
Billings	214	25.68	412	41.20
Helena	323	38.76	410	41.00
		SIDNEY		
Great Falls	339	40.68	377	37.70
Billings	207	24.84	368	36.80
Helena	352	42.24	423	42.30
		MILES CITY		
Great Falls	273	32.76	318	31.80
Billings	136	16.32	292	29.20
Helena	296	35.52	347	34.70
		LEWISTOWN		
Great Falls	96	11.52	106	10.60
Billings	97	11.64	162	16.20
Helena	125	15.00	188	18.80
		GLENDIVE		
Great Falls	318	38.16	351	35.10
Billings	207	24.84	368	36.80
Helena	352	42.24	423	42.30

5. Income & Expense Summary:

Total Revenue:	
Passengers	$1,005,927
Freight	80,000
Total	$1,085,927
Total Operating Expense:	
10,585 hr. @ $106.23	$1,124,445
Net Loss	$38,518

The conclusions one must logically draw as to the economic feasibility of such a system of commuter routes as examined here for the seven Eastern Montana cities are many. The methodology has been first, to outline a model system, and then to look at the anticipated costs and revenues associated with such a system to determine the profit or loss resulting from the operating of such a system. The conclusions drawn from this analysis for the Eastern Montana cities are as follows:

1. The kind of commuter route system analyzed here for the seven Eastern Montana cities is marginal from the economic point of view, if assumptions concerning costs and revenues are all realistic.

2. Such a commuter system is probably the only way increased frequency and schedules are going to be realized by these cities, unless the Civil Aeronautics Board changes its policy toward the number of subsidy routes.

3. The kind of increased frequency proposed here would serve to strengthen these air markets, and would better serve the public convenience and necessity.

4. Within the next fifteen years, it is unlikely that any of these markets in Eastern Montana can become major air markets desirable as stops for trunk airlines.

5. From the use, public convenience, and necessity points of view, it is clear that increased frequency of service and better integrated scheduling of service are of much more

importance to these communities than increasing size of airplanes with the present frequency.

6. This analysis serves to point out that there are social and economic costs of space. These costs in many instances tend to offset some of the advantages of space enjoyed by those living in areas where space is viewed as a free comodity or good.

7. The people of the area can have and enjoy the kind of increased service analyzed here, if they are willing to increase their use of the service, and in some instances pay more for the use of that service in short-haul markets than they would expect to pay in long-haul nonstop markets served by major trunk carriers. This again is a reflection of the costs of space.

8. It seems only reasonable to assume that over the next two decades, Frontier Airlines is going to continue to grow and become a major trunk airline, with a continued increase in size and up-grading of equipment. It is equally likely that Civil Aeronautics Board pressure for less subsidy will continue in the future. If these two factors remain, there is no question that air service to all or most of these Eastern Montana cities is in severe jeopardy.

9. Assuming present trends to continue, it is likely that the only hope of most or all of these cities for air service is by commuter or third level carriers.

10. The decision is not made entirely by the communities, but rather by an urbanizing society and the forces of technological change.

11. The responsibility for the development of a new system of service for Eastern Montana is not only that of the airlines and the airline industry, but also of the people of Montana through the Montana Aeronautics Commission.

12. Increased or continued service depends in large measure on the people of the area and their response to service.

13. One would conclude that air service can be provided to the communities involved, but the costs are high, and the demands on the people to respond and cooperate are great.

14. The next few years are going to be crucial in deciding the fate of air service to many of these communities, and the time for increased cooperation and dedication to improving and maintaining service is now.

15. The economic, social, and political worlds are cruel, and it is a fact of history that some communities live and prosper while some communities die. The availability and adequacy of transportation is critical to this process.

In addition to the seven Eastern Montana cities considered, the commuter system also includes the city of Kalispell. The principal need of the Kalispell area was noted previously to be service to Great Falls. There is known to exist a strong community of interest between Kalispell and Great Falls, both because of the existence of Great Falls as a major air hub for out-of-state travel to the east and to the south and because of the existence of Great Falls as a major wholesale/retail trade center.

It is important to note that the Kalispell trade area, as defined in the Upper Midwest Economic Study, contained about 52,000 people in 1960, making it fifth largest of the sixteen such areas in Montana. The Kalispell area is more populous than the Glasgow, Sidney, and Wolf Point trade areas together. It is also larger than the Havre/ Lewistown trade areas combined or the Miles City/Glendive areas combined. Presently there exists only one airport to serve a population equivalent to that served by two or three airports in other parts of the State.

It is also significant to note that it is the fastest growing trade area in the State. (See Chapter 1). By 1980 the Kalispell trade area is projected to have 80,102 inhabitants, making it fourth largest in the State, behind only Great Falls, Billings, and Missoula. It will then be twice the size of the Helena trade area and half again as large as the Bozeman/Livingston areas combined.

To project traffic until 1980 for this area is indeed a difficult task. Should one assume that only one airport will continue to serve the area? If one assumes the existence of a commuter system between this area and Great Falls, the projection procedure to use is questionable. Past traffic volume has been almost solely dependent upon frequency of service. It thus does not seem advisable to base future traffic projections on historical data. Definite recommendations have been made earlier in the report relative to the need for a detailed, in-depth study of the Kalispell community and trade area upon which to base possible new service with present or new carriers. Detailed traffic projections based on such a study would then be possible and meaningful.

To facilitate the analysis of the proposed commuter system, a traffic projection has been made which assumes the addition of two Great Falls/Kalispell loop flights. It is estimated that such immediate action would double existing traffic from 11,450 in 1967 to 22,900 in 1970. It is then assumed that a normal growth of two to two and one-half times the 1970 level will occur over the next ten years resulting in a lower limit projection for 1980 of 45,800 and an upper limit of 57,250. Lower and upper limit projections for 1975 are 34,350 and 40,075 respectively, an addition of from 2290 to 3435 passengers annually.

To determine the economic feasibility of the two proposed commuter routes, only passenger revenue is considered. Freight, air express, and mail are not included as revenue generators to determine the "break-even point". These items would provide revenue in excess of that revenue required for the flight to be self-supporting. The methodology is designed to determine the increased load factor which is necessary for the addition of any flight. The same procedure will be used later in analyzing other city pairs.

The flight time between Great Falls and Kalispell is forty-nine minutes. To make one loop the total time, including a ten minute stop in Kalispell, is 108 minutes, or 1.8 hours. Knowing that it costs $106.23 per hour to operate the proposed airplane, the total cost of this Great Falls/Kalispell round trip flight is $191.21. Dividing this by the existing one-way fare of $18.00 indicates that the plane must carry 10.6 paying, one-way passengers. In order to break even, each leg of the flight must have an average load factor of slightly over five (5).

To operate a route permanently, a total of 3877 origin and destination passengers per year must be generated in

the market. Any additional revenue, whether it be from passenger boardings, express, freight, or mail would represent profit over and above all costs of operation.

In summary, to economically operate the two Great Falls/Kalispell routes as proposed above, the market would have to generate a total of 7754 origin and destination passengers per year. Assuming operation in 1970, this would leave 15,146 passengers for the existing service carriers, which would be an annual increase in passengers for these carriers of 9.7 percent between 1967 and 1970. If this amount of traffic, 7754, can be generated by the addition of the two routes, the routes are feasible. Furthermore, any additional flights to this market will be profitable if an average load factor of over 10.6 passengers per flight is maintained.

To determine the feasibility of any other commuter route, one would proceed in a fashion similar to that outlined for the Great Falls/Kalispell market. The object would be to estimate the load factor which would have to be maintained to make the flight "break even". To do this, one must first determine the flight time involved in the route, which consists of air time plus ten minutes for stops at intermediate stations. Multiplying this flight time by the total operating cost per hour of $106.23 provides an estimate of the total cost of operating the route under consideration.

The next step is to choose, by some criteria appropriate for the route under consideration, a fare structure. The total cost of operating the route then is divided by the fare to determine the load factor which must be maintained on the route to make it profitable. When a radial or loop-type of route between two cities is considered, the load factor can be divided by two to determine the average load factor per leg of the flight. When a linear type of flight is considered, passing through three or more cities, the load factor can be determined for each leg of the flight by using a weighted average. If it can be substantiated that the estimated load factor can be maintained or exceeded, the flight is economically sound.

Considerable discussion has been generated over the possibility of adding additional Montana cities to an intrastate air service system. At the present time there is no intrastate system except as provided incidentally by the airlines which operate in an interstate market. This is not to say that some city pairs in Montana do not have excellent service, because in some instances they do. With this background, the feasibility of adding additional cities to the proposed intrastate system is discussed in the following pages.

Table 4:16 is included to assist in analyzing the possibility of adding additional cities to an intrastate system. This table shows Montana's urban areas ranked by projected size for 1975. The only cities with a projected population of over 10,000 which do not now have air service are the cities of Livingston, Laurel, and Anaconda. All of these cities, however, are located within a half-hour to forty-five minutes drive of a major airport. Livingston is served by the Bozeman airport, while Anaconda and Laurel are served by the Butte and Billings airports respectively. Because of the short distances and times involved in reaching these airports, it is logical to assume that these service patterns will continue and that service at these peripheral cities will not be added.

Service has recently been initiated at Libby by Commute Air, and one will soon be able to examine the potential of the Libby market on the basis of this experience. Certainly the linking of Libby to the major points of Spokane and Kalispell, as Commute Air has done, is the logical kind of service to originally initiate at Libby.

The cities of Whitefish, Columbia Falls, and Polson are significant in terms of population size but they are also closely linked with the Kalispell airport, and it is logical to assume that they will continue to be served through that facility. As has been stated earlier in this report, the Kalispell service should expand rapidly in the next few years, which will also provide Whitefish, Columbia Falls, and Polson with additional, improved service.

It is clear then, from an examination of the remaining cities, that the largest unserved market exists in the Cut Bank/Shelby area which did, at one time, have commercial air service. The projected population for these two urban areas in 1975 amounts to approximately 10,000 people. This should be one of the first markets to which service might be considered. The logical service to consider would be routes running directly from Great Falls to Cut Bank/Shelby and returning.

The minimal service one ought to consider for such points is at least four frequencies per day. This is true primarily because these markets are relatively close, in terms of driving distance, to existing commercial airports. It is clear, from previous discussion, that people will not use air service if it is inconvenient in terms of scheduling, or if time can be saved by driving to neighboring airports. If Cut Bank/Shelby were provided service, it should be at least on a four flight per day basis in order to develop the full potential of the market.

Table 4.16. Urban Areas, Ranked by Size, in Montana in 1975.

Urban Area	Projected Population 1975 (000's)	Actual Population 1960 (000's)
Billings - Urban Area	90.1	57.5
SMSA-Yellowstone County	(119.5)	(79.0)
Great Falls - Urban Area	86.3	64.1
SMSA-Cascade County	(95.7)	(73.4)
Missoula	50.9	37.2
Butte	47.9	44.4
Helena	26.9	21.7
Kalispell	23.8	17.7
Bozeman	22.3	16.4
Glasgow	17.3	9.9
Anaconda	17.1	15.6
Havre	14.7	12.5
Laurel	13.3	8.6
Miles City	11.4	10.2
Glendive	11.1	8.9
Livingston	10.8	8.7
Libby	10.5	6.9
Lewistown	9.4	7.9
Whitefish-Columbia Falls	7.1	5.7
Sidney	7.0	5.2
Cut Bank	5.6	4.5
Deer Lodge	5.3	4.7
Polson	5.1	3.7
Wolf Point	5.1	3.6
Dillon	4.8	3.7
Shelby	4.4	4.0
Hamilton	3.9	3.6
Hardin	3.6	2.8
Roundup	3.0	3.1
Conrad	2.9	2.7
Baker	2.7	2.6
Malta	2.6	2.5
TOTAL	526.9	400.6

Dillon is the next largest market which is not locally served, but it is situated even closer to a major commercial airport than is Cut Bank/Shelby. Dillon is approximately seventy miles from the Butte airport. The city of Hamilton is also showing a significant projected population for 1975, but it is very close to Missoula. The cities of Hardin, Roundup, and Conrad are similar to Hamilton in that they are all approximately an hour's drive from a major air hub.

This leaves the two cities of Baker and Malta, both of which are isolated from any major hub of air activity. However, both Baker and Malta are extremely small centers of only approximately 2500 people. Experience shows that these markets are probably too small to be considered for commercial air service at this time. An example is the Wolf Point market which is significantly larger than either Malta or Baker and is equally as isolated, but has had difficulty supporting air service in the past.

Table 4:17 allows consideration of the possible inclusion of any market. The table shows markets at four selected distances from other markets, including 40, 60, 80, and 100 air miles. The cost of operating a flight of a selected distance is then calculated on the basis of two possible costs per hour. The operation of the Twin Otter is estimated to cost approximately $106 and $60 has been assumed for a possible alternative aircraft. This alternative aircraft would be a smaller one with a smaller capacity and comparably lower operational costs. It is clear that even with $60 per hour as a total operational cost, the loads needed to make some of the smaller markets break even could be extremely high relative to the size of the market.

This cost is compared directly with the revenue which would be generated over such a route, assuming twelve cents per air mile as a basis of the fare. By determining a market's distance from other airports, one can assess the economic feasibility of any route on the basis of whether or not the total traffic required to make the route feasible seems consistent with the size of the market. On the basis of such an analysis, the area of Cut Bank/Shelby appears to be a feasible market for inclusion on a commuter route, if such a commuter air system becomes operational in Montana. It is also possible that some of the smaller markets in Western Montana such as Dillon may be economically included, depending on local conditions in those markets and the economy at the time of the initiation of service. It is doubtful whether markets such as Malta and Baker will be able to take direct advantage of or be included in commuter air service patterns. It is also concluded that service is unlikely to points such as Roundup, Hardin, Hamilton, Deer Lodge, and Conrad which are relatively small cities within an easy hour's drive of major air hubs.

Table 4:17. Summary of Total Yearly Origin and Destination Traffic Per Round Trip which must be Maintained to Break Even on Flights of Varying Lengths

Stage Length	Flight Time[1]	Cost Per Hour @ $106.23[2]	Cost Per Hour @ $60.00[3]	One Way Fare @ $.12/mi.	Total O & D Traffic Per Year Per Flight[4] (1)	Total O & D Traffic Per Year Per Flight[4] (2)
40 mi.	37 min.	$65.51	$37.00	$4.80	4,981	2,811
60 mi.	50 min.	$88.53	$50.00	$7.20	3,910	2,519
80 mi.	63 min.	$111.54	$63.00	$9.60	4,241	2,409
100 mi.	77 min.	$136.33	$77.00	$12.00	4,147	2,336

[1]Air Time for round trip plus ten minutes for stop at intermediate station.

[2]Twin Otter cost per hour.

[3]Alternative cost-used for comparison.

[4]Average load factor per flight times 365.
Column 1 indicates the total O & D traffic needed to break even on flights costing $106.23 per hour and Column 2 indicates total O & D traffic needed to break even on flights costing $60.00 per hour.

CHAPTER 5

A HISTORICAL ANALYSIS OF AIR CARGO MOVEMENT IN MONTANA WITH PROJECTIONS TO 1980

This chapter examines the past, present, and future of air freight, express, and mail by city and for the state of Montana. The growth patterns and anticipated activities associated with air cargo are rapidly expanding or changing variables. Table 5:1 and 5:2 show the tons of freight, express, and mail by city in Montana from 1962 to 1966. All cities with year-round air service are considered in this analysis. All of the material for these tables is for fiscal years ending June 30. The definitions of express, freight, and mail are as follows:

express - Property transported by air under published air express tariffs filed with the Civil Aeronautics Board.

freight - Property other than express and passenger baggage transported by air.

priority U.S. mail - Mail bearing postage for air transportation that goes by air on a priority basis at air mail service rates.

All of the material for these tables is taken directly from the *Airport Activity Statistics* as published by the Civil Aeronautics Board and Federal Aviation Agency.

The trends and growth patters for freight, express, and mail have not been as constant and as clearly identified as they have been for passenger traffic. There has been considerable variation from year to year within the individual markets of Montana. Table 5:3 shows the air freight, air express, and air cargo for the state of Montana. It can be observed from that table that freight has been the fastest growing segment of the air cargo business in Montana, with a 67.5 percent increase from 1962 to 1966. Express and mail have both shown an increase during this same period of approximately 54 percent. Even though the individual cities have shown some fluctuation, it is clear that there are definite upward trends for Montana's air cargo industry. Figures 5:1 and 5:2 show the growth in this industry for this five-year period.

The long term trends throughout the entire airline industry show tremendous increases in the air cargo business during the past ten years. *The Civil Aeronautics Board Chart Book of Airline Trends* published in November of 1966,

Table 5:1. Freight, Express, and Mail Originations for Seven Montana Cities, Fiscal Years 1962 to 1966 (in tons)*

YEAR	BILLINGS	BOZEMAN	BUTTE	GREAT FALLS	HELENA	MISSOULA	KALISPELL
				FREIGHT			
1962	163.0	2.5	29.4	77.2	4.6	15.9	2.8
1963	199.0	6.9	25.2	106.8	6.1	18.6	1.3
1964	267.0	16.7	27.3	112.4	7.1	15.5	2.5
1965	286.0	13.9	25.9	108.3	8.5	15.4	1.4
1966	273.0	13.3	31.4	124.0	11.4	34.2	3.2
				EXPRESS			
1962	55.0	.8	7.4	22.1	4.2	7.1	.6
1963	76.0	2.8	6.1	26.7	5.9	9.5	.8
1964	83.0	1.2	4.9	31.6	5.3	4.7	.7
1965	72.0	.9	6.0	38.8	7.6	5.1	1.1
1966	63.0	1.4	6.9	46.6	6.5	9.4	1.3
				MAIL			
1962	150.2	3.3	16.6	75.2	13.3	25.8	4.6
1963	188.2	4.5	14.3	89.2	13.7	26.7	4.0
1964	179.2	4.8	19.1	82.3	13.9	16.5	4.0
1965	208.8	5.5	24.4	96.1	14.0	25.2	4.8
1966	237.5	6.2	26.4	117.9	19.6	34.2	5.4

*Source: Department of Transportation, *Airport Activity Statistics*, F.A.A., 1962 to 1966.

Table 5:2. Freight, Express, and Mail Originations for Seven Montana Cities, Fiscal Years 1962 to 1966 (in tons)*

YEAR	SIDNEY	GLASGOW	GLEN-DIVE	MILES CITY	HAVRE	WOLF POINT	LEWIS-TOWN
			FREIGHT				
1962	3.7	2.0	9.7	2.3	.6	.7	.7
1963	2.1	3.1	7.2	1.4	1.2	1.4	1.0
1964	3.0	3.5	9.2	2.5	8.2	.5	1.2
1965	7.8	4.5	9.5	4.4	2.6	.9	4.6
1966	7.2	14.0	8.2	3.8	3.1	1.1	5.7
			EXPRESS				
1962	.4	.2	.1	.3	.3	.3	.3
1963	.1	.2	.1	.4	.3	.1	.3
1964	.3	2.0	1.0	.7	1.0	.0	.3
1965	.6	4.4	1.4	.6	2.1	.2	.3
1966	.4	10.1	1.0	.8	4.4	.1	.5
			MAIL				
1962	.8	1.5	.7	.9	1.0	.7	1.4
1963	1.3	1.7	.8	.8	.9	.7	1.8
1964	.8	2.2	.5	.7	1.3	.6	1.8
1965	.8	1.0	1.1	1.0	1.0	.6	1.3
1966	1.6	2.4	.6	1.2	1.6	.7	2.3

*Source: Department of Transportation, *Airport Activity Statistics*, F.A.A., 1962 to 1966.

Table 5:3. Freight, Express and Mail Dispatched from all Montana Cities on Scheduled Air Service for Fiscal Years Ending June 30. (1962-1966)*

	In Tons			
Year	Freight	Express	Total Freight and Express	Mail
1962	320	99	419	298
1963	386	129	515	350
1964	480	136	616	329
1965	495	141	636	386
1966	536	152	688	459

*Source: Department of Transportation, *Airport Activity Statistics*, F.A.A., 1962 to 1966.

Figure 5:1. On Line Revenue Traffic - Freight and Express Originations - State of Montana (Fiscal 1962 - 1966)

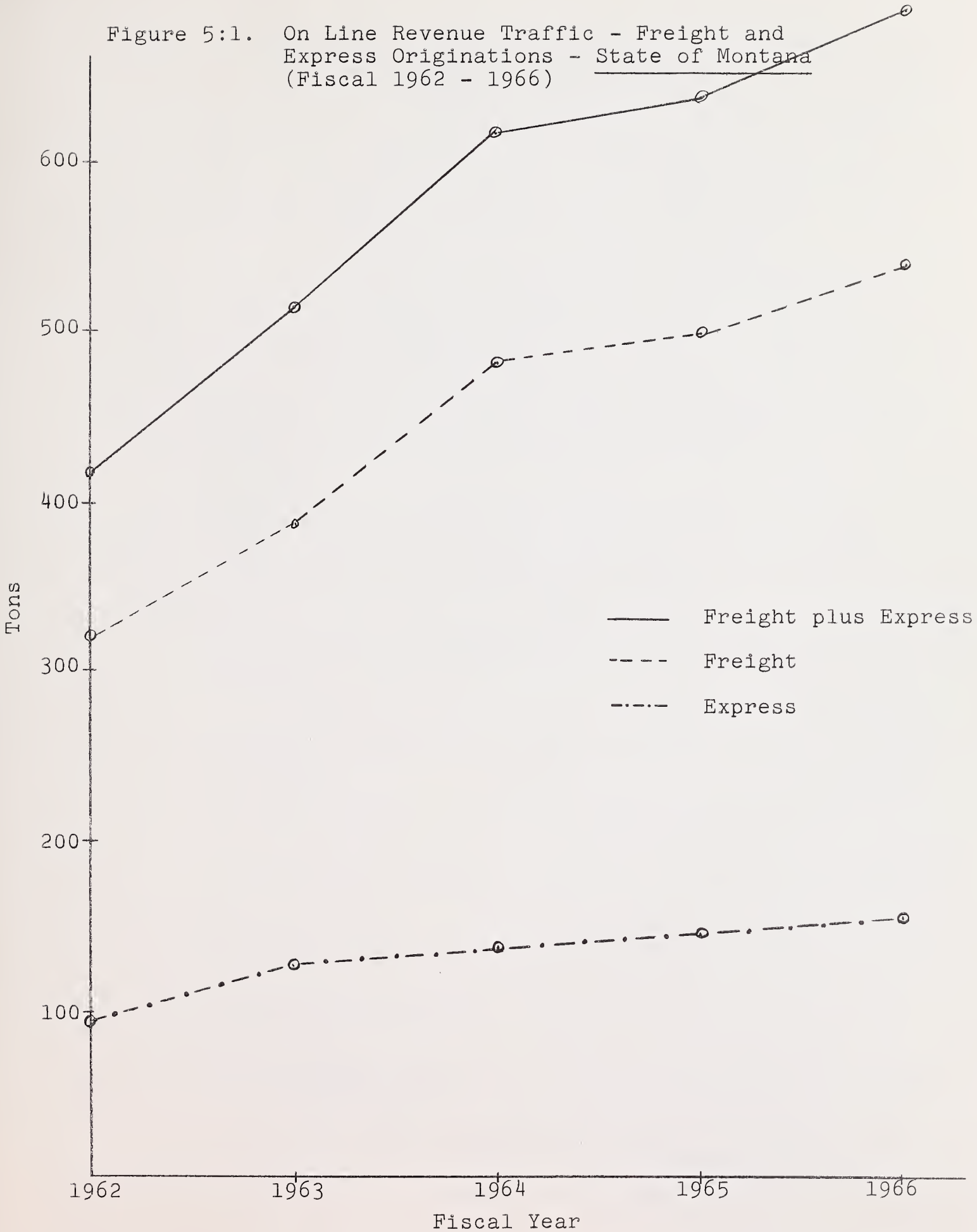
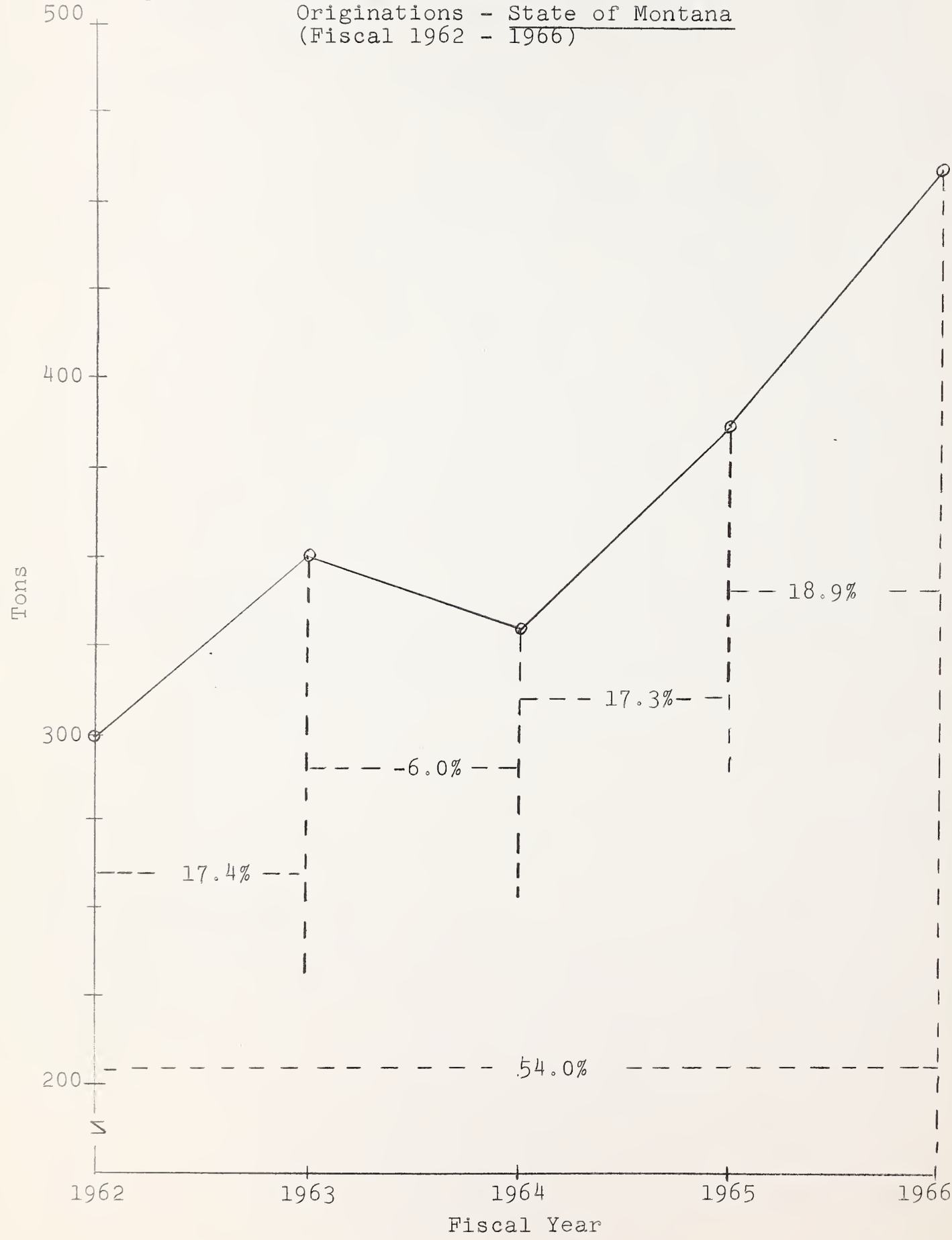


Figure 5:2. On Line Revenue Traffic - Total U.S. Mail Originations - State of Montana (Fiscal 1962 - 1966)



clearly indicates some of these trends. This data shows that air cargo accounted for only eight percent of the revenue ton miles for domestic operations for trunk carriers in 1955, while it accounted for fifteen percent in 1965. This Civil Aeronautics Board data also indicates that the freight handled by domestic trunk carriers has grown from .17 billion ton miles in 1955 to 1.01 billion ton miles in 1966. This data further indicates that the average annual growth rate in freight handled by domestic carriers was 14.3 percent in the period 1955 to 1962 and 27.7 percent per year in the period 1962 to 1966.

Figures 5:3 through 5:14 show the historic pattern of growth for freight, express, freight plus express, and mail for the cities of Billings, Great Falls, Butte, Missoula, Helena, and Bozeman. These figures are directly comparable to Figures 5:1 and 5:2 for the state of Montana. No individual projections are made by city, but a projection is made for freight, express, and mail for the state of Montana for 1970 to 1980. This projection contains an upper and a lower limit, as was the case with all traffic passenger projections.

No attempt will be made here to identify all of the factors related to the large surge anticipated in the air cargo business. The following is, however, a list of some of the key items which are considered important to this surge of activity in air cargo movements.

1. Technological innovations in equipment more adequately designed for the handling of large volumes of air freight.

2. Air carriers are interested and actively working to increase volumes of business in air cargo.

3. Air cargo rates are becoming more attractive.

4. There is an overall trend toward increases in the value of time.

5. Service is becoming an increasingly important commodity at all levels of business activity.

6. Costs of packaging for shipping are often drastically reduced.

7. Air freight often allows one to cut warehouse and inventory costs.

8. Insurance costs for shipping by air in many instances are reduced.

Figure 5:3. On Line Revenue Traffic - Freight and Express Originations - Billings (Fiscal 1962-1966)

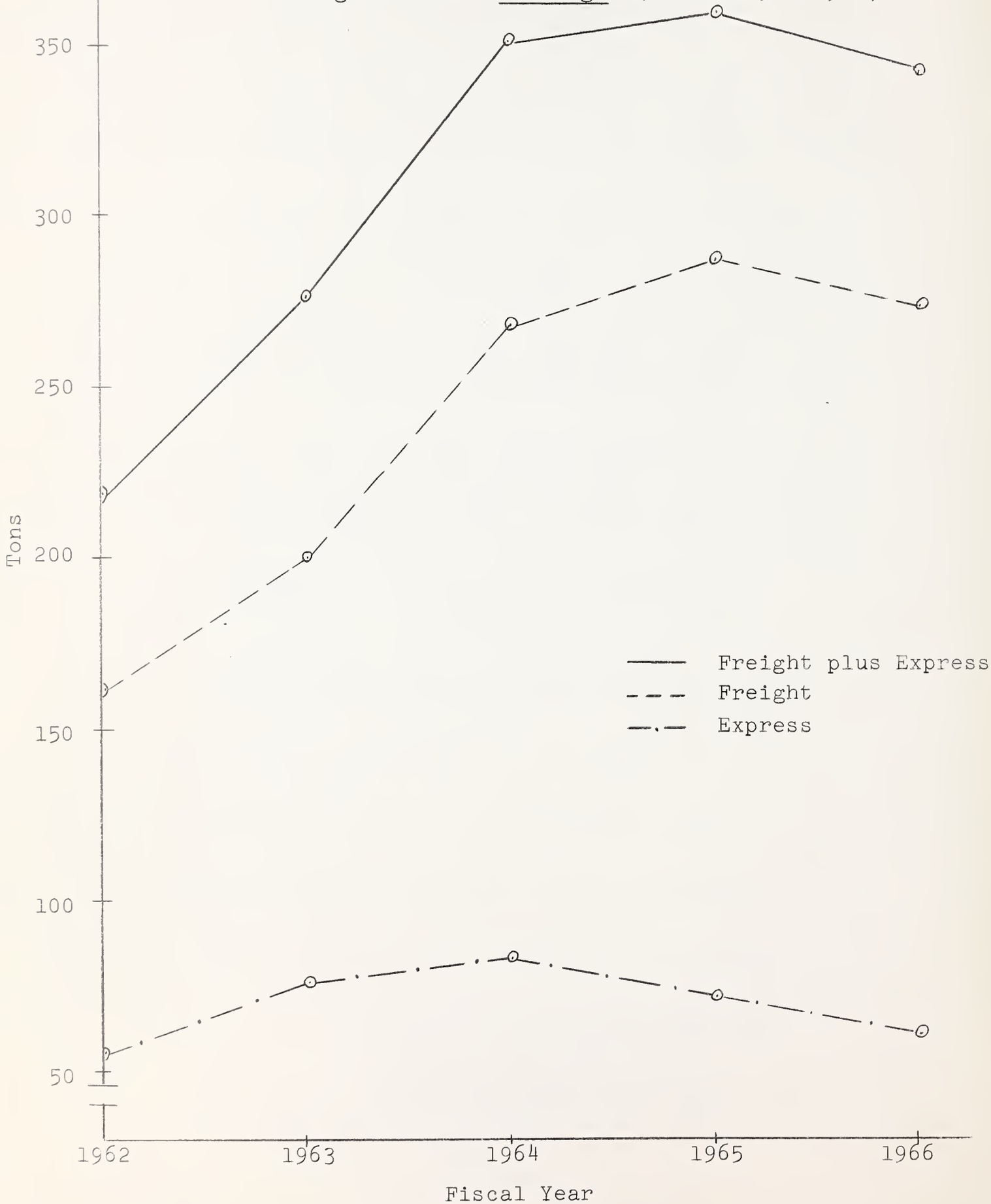


Figure 5:4. On Line Revenue Traffic - Total U.S. Mail Originations - Billings (Fiscal 1962-1966)

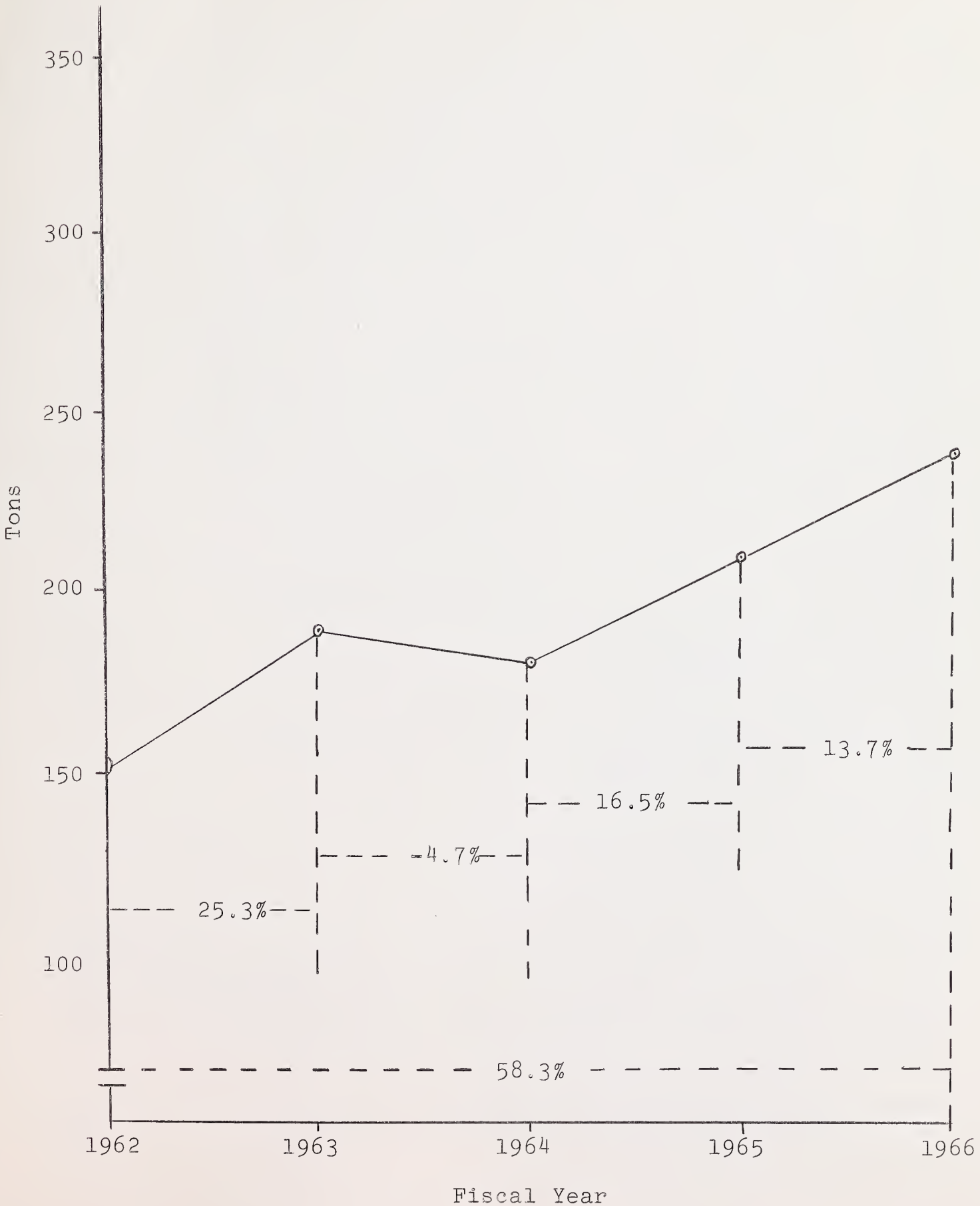


Figure 5:5. On Line Revenue Traffic - Freight and Express Originations - Great Falls (Fiscal 1962-1966)

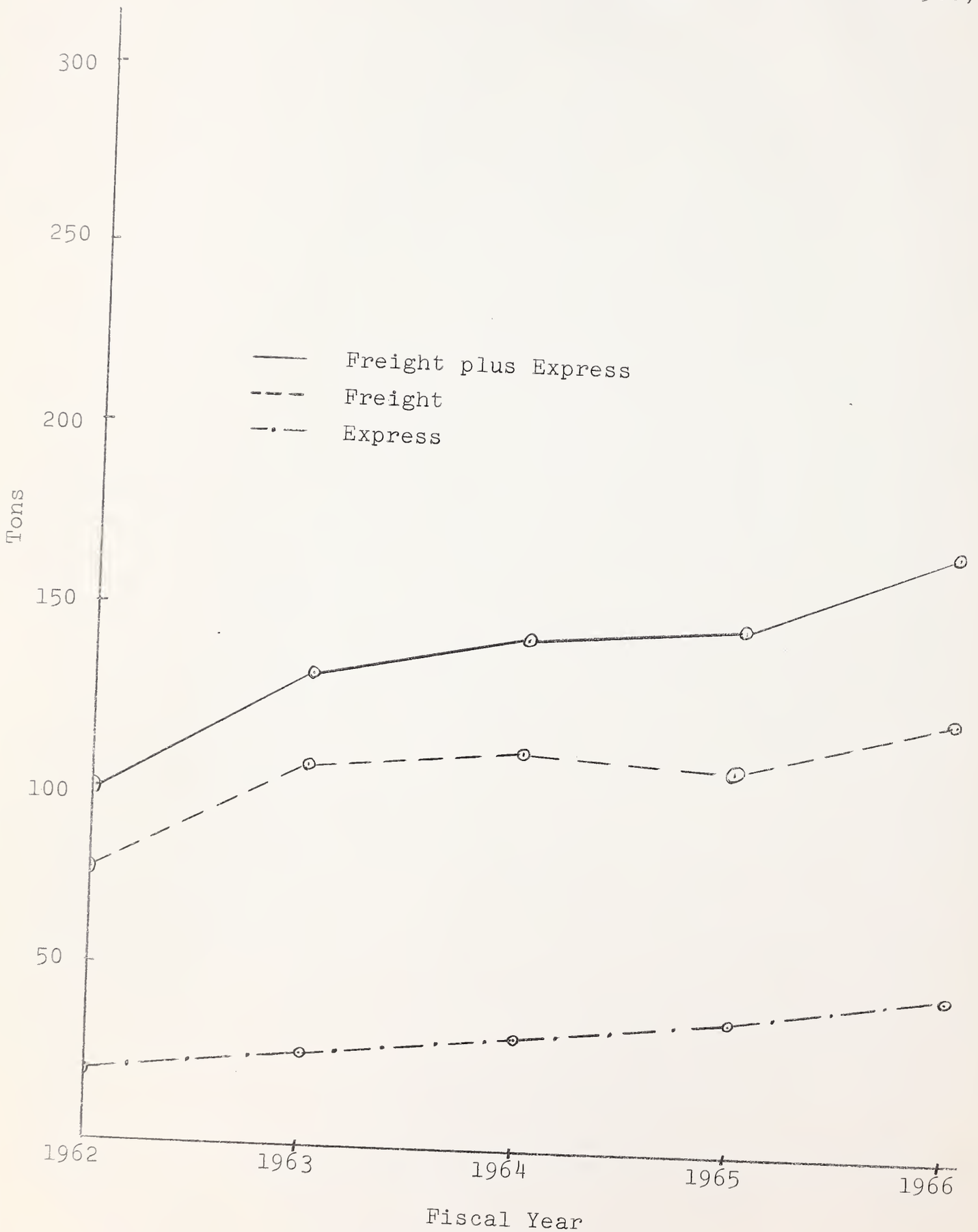


Figure 5:6. On Line Revenue Traffic - Total U.S. Mail Originations - Great Falls (Fiscal 1962-1966)

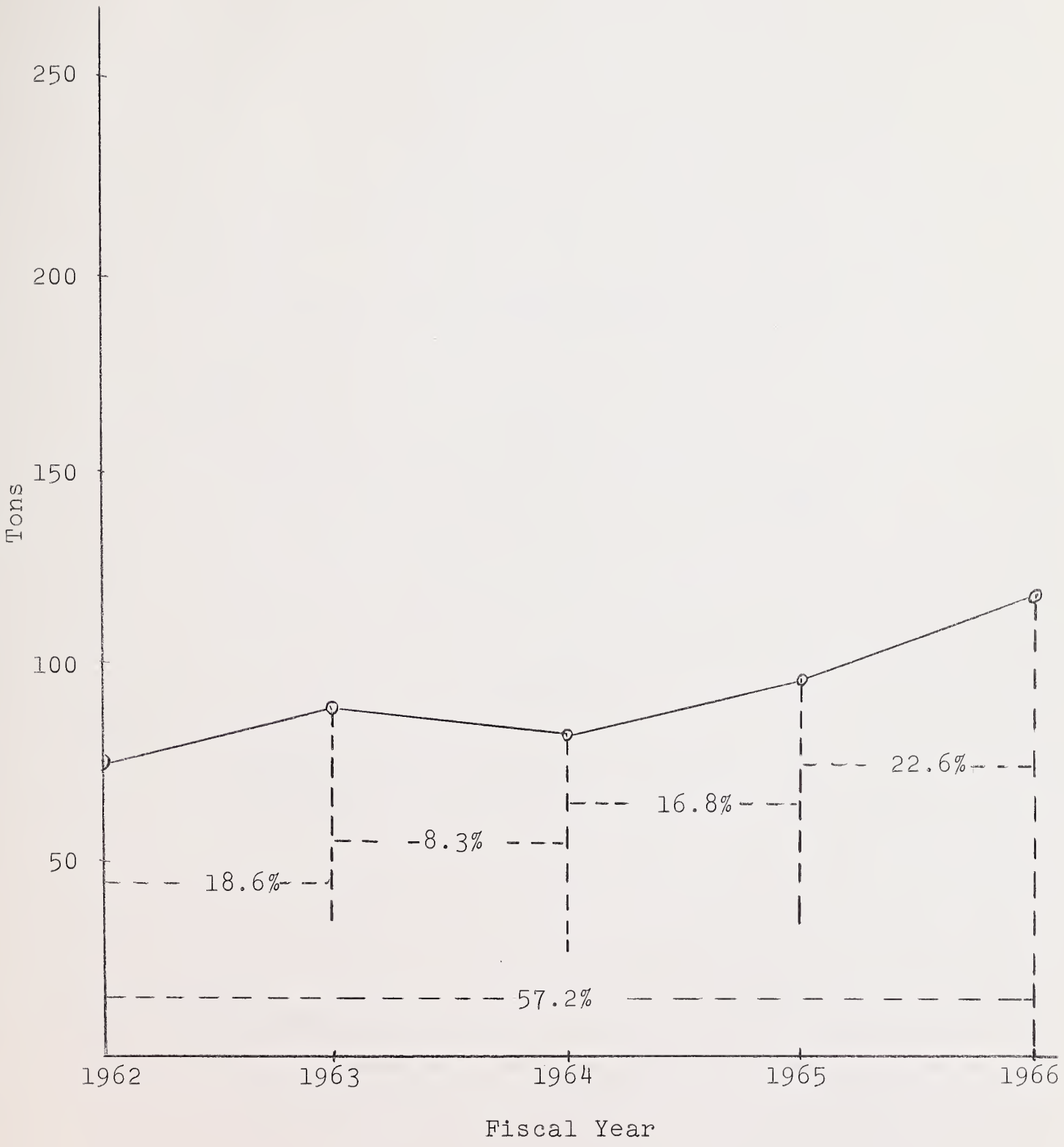


Figure 5:7. On Line Revenue Traffic - Freight and Express Originations - Butte (Fiscal 1962-1966)

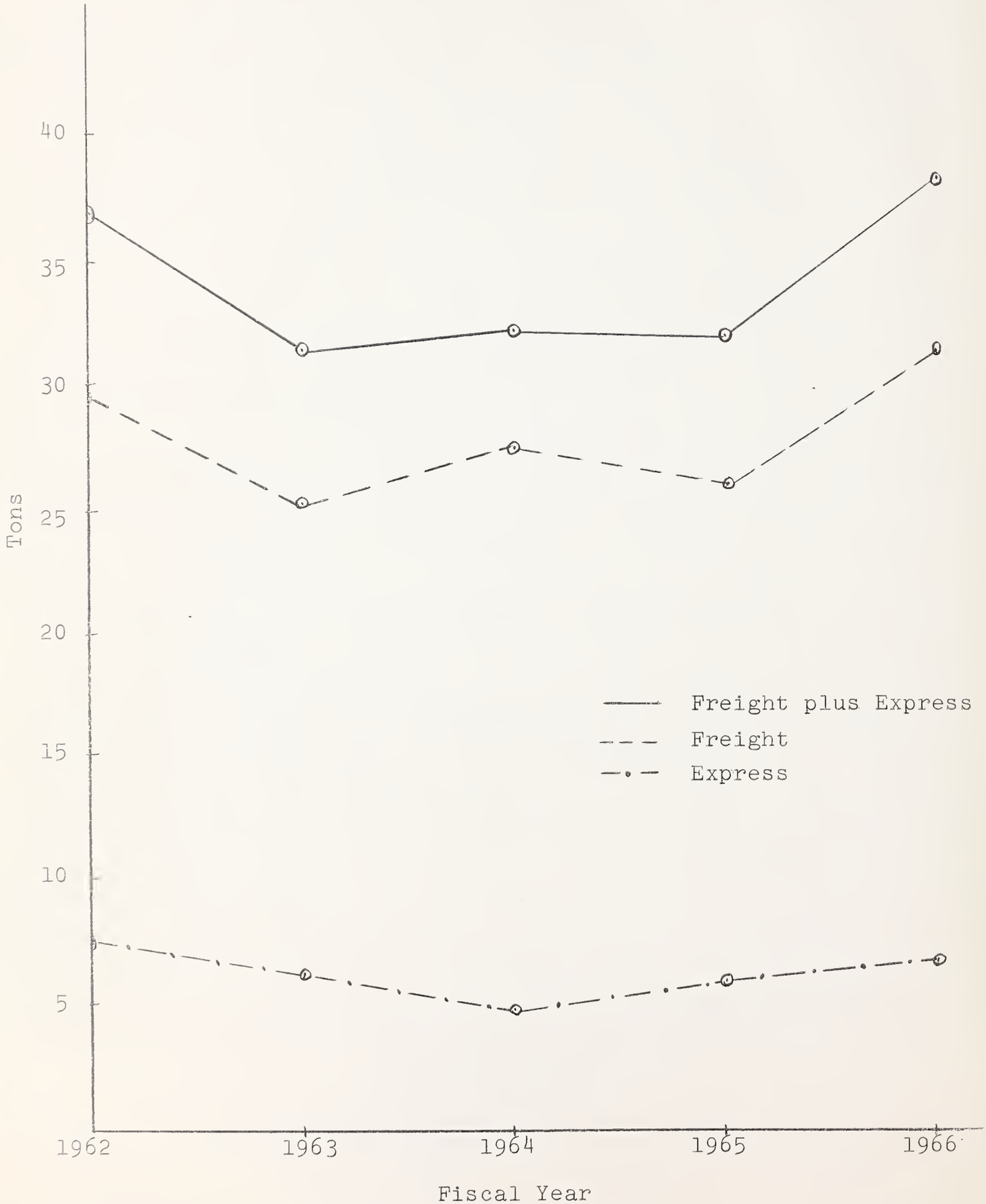


Figure 5:8. On Line Revenue Traffic - Total U.S. Mail Originations - Butte (Fiscal 1962-1966)

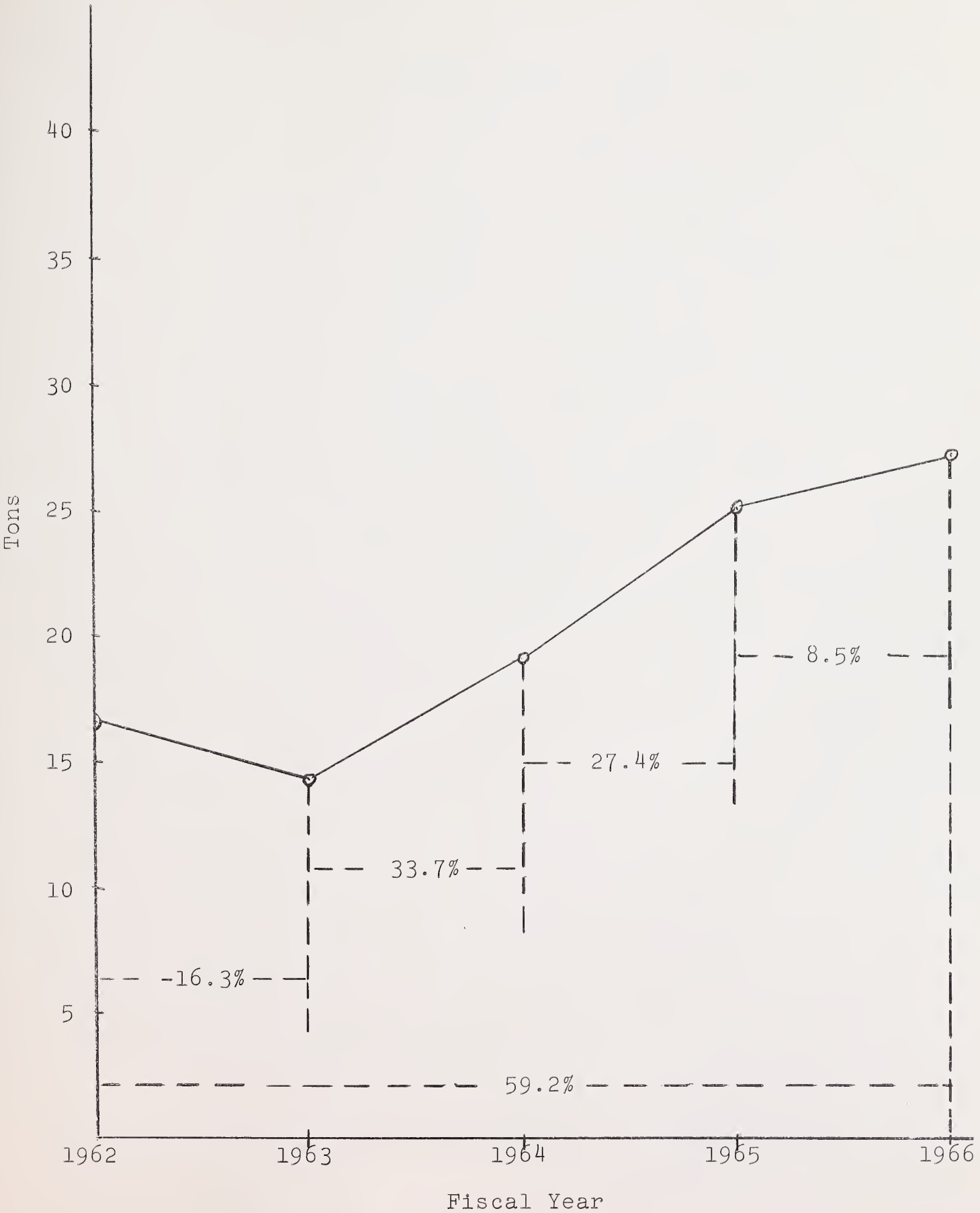


Figure 5:9. On Line Revenue Traffic - Freight and Express Originations - Missoula (Fiscal 1962-1966)

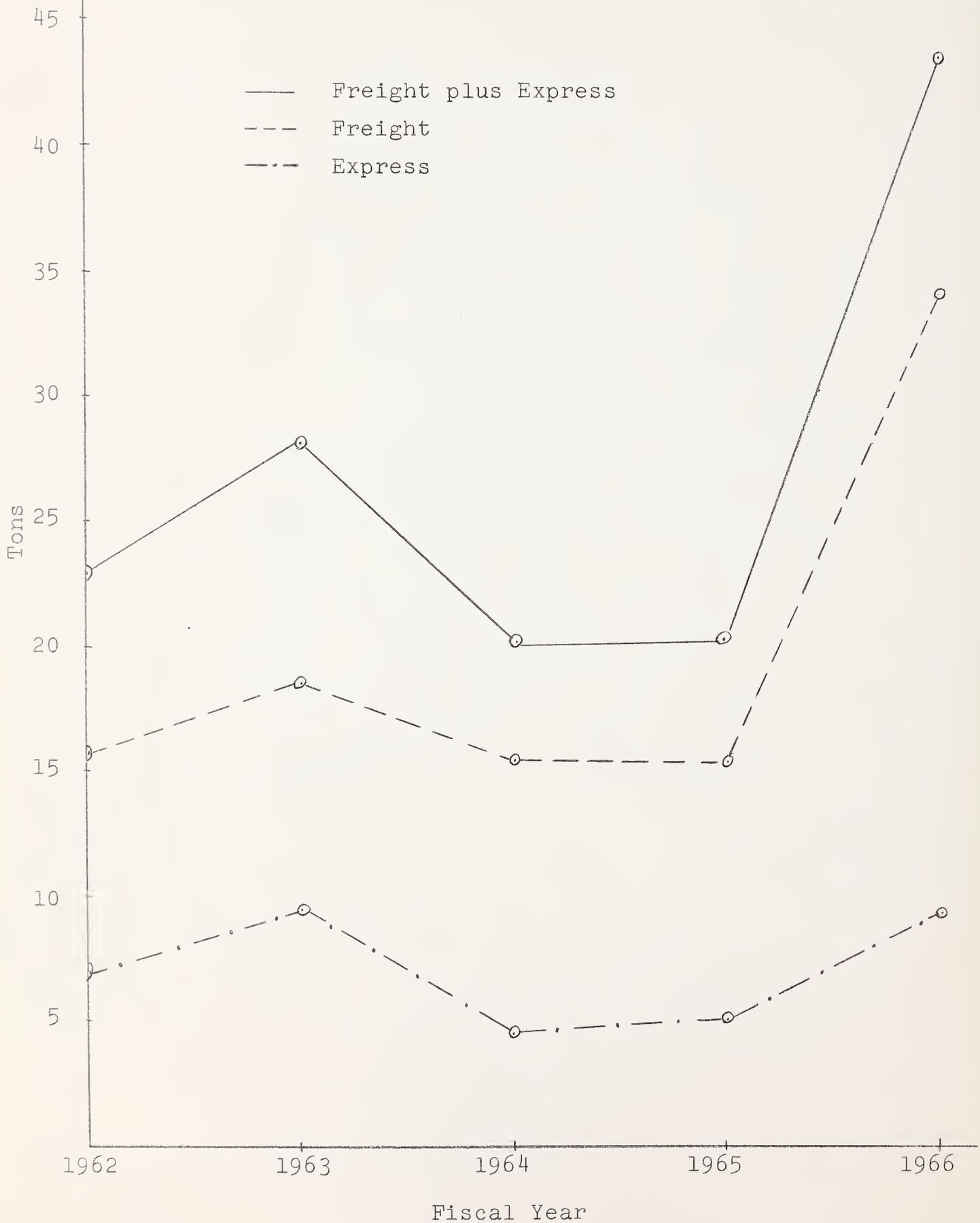


Figure 5:10. On Line Revenue Traffic - Total U.S. Mail Originations - Missoula (Fiscal 1962-1966)

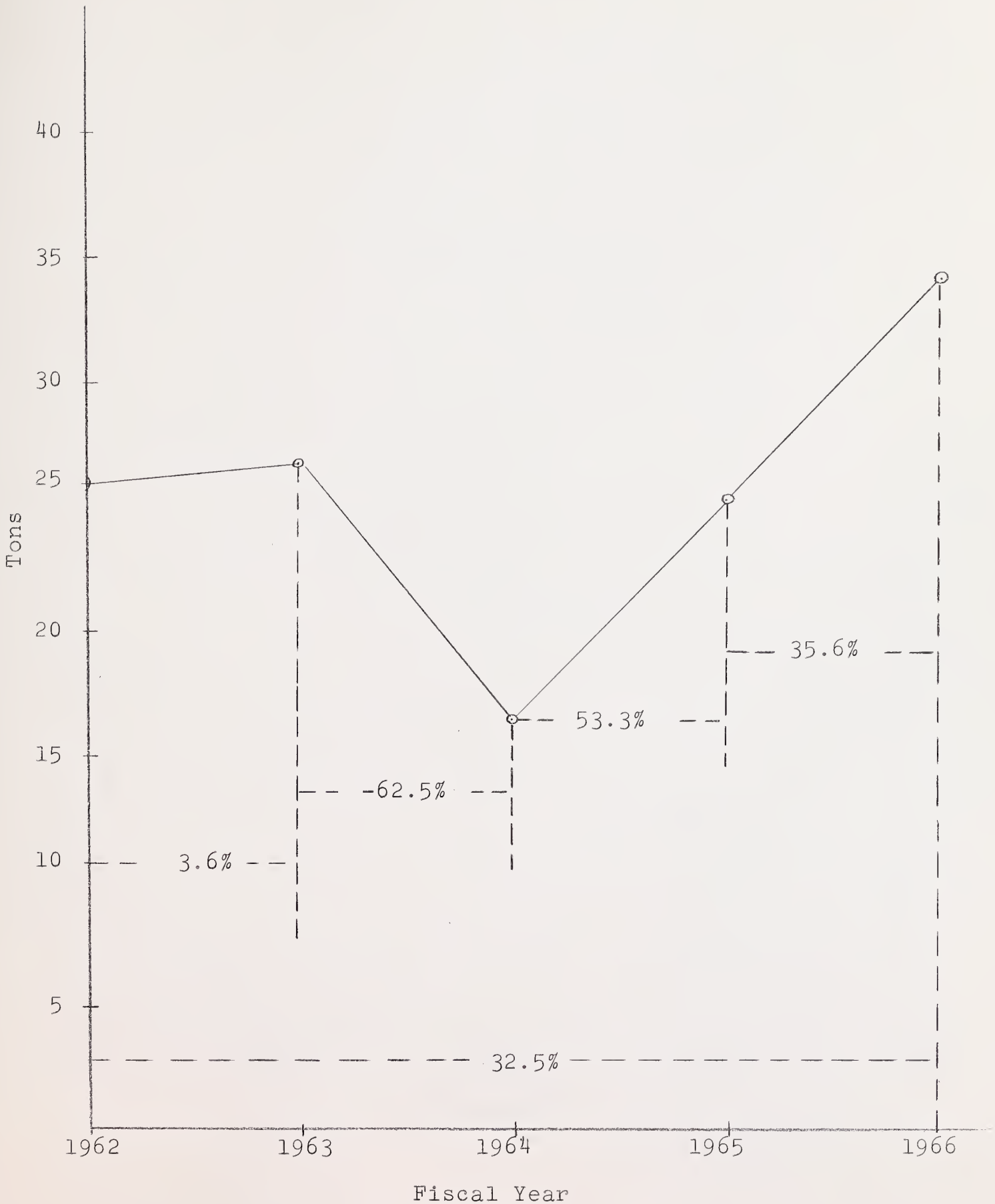


Figure 5:11. On Line Revenue Traffic - Freight and Express Originations - Helena (Fiscal 1962-1966)

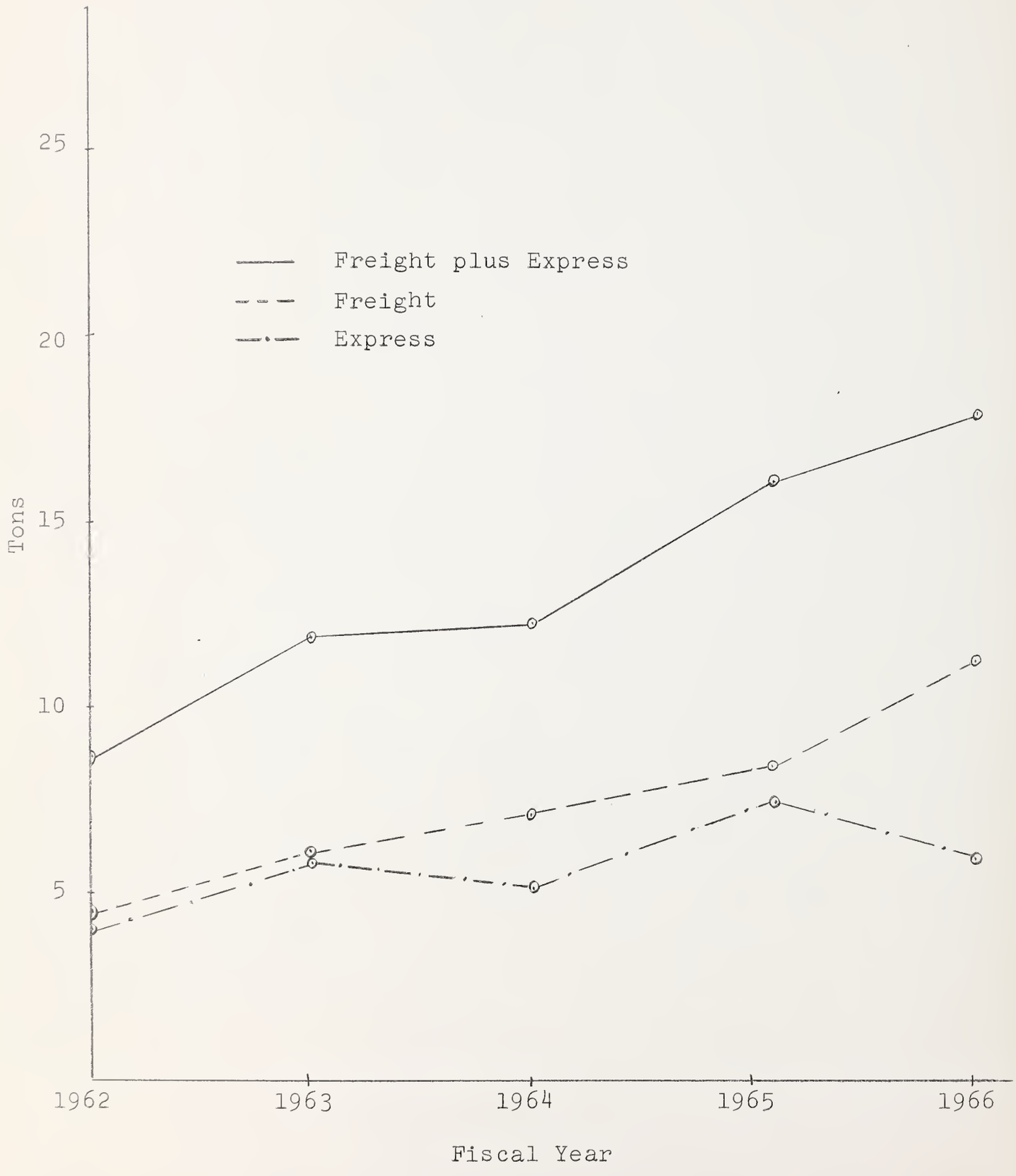


Figure 5:12. On Line Revenue Traffic - Total U.S. Mail Originations - Helena (Fiscal 1962-1966)

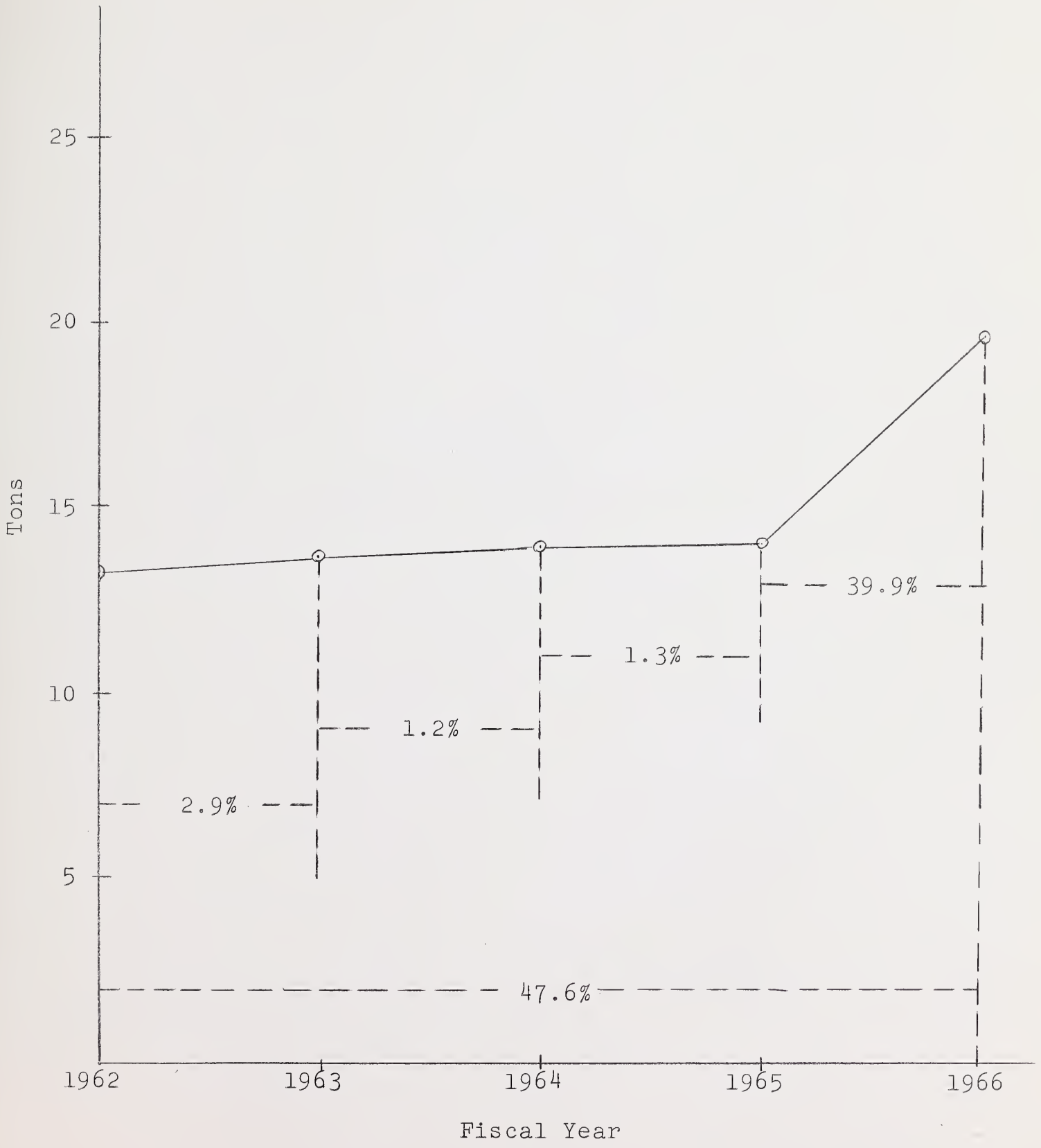


Figure 5:13. On Line Revenue Traffic - Freight and Express Originations - Bozeman (Fiscal 1962-1966)

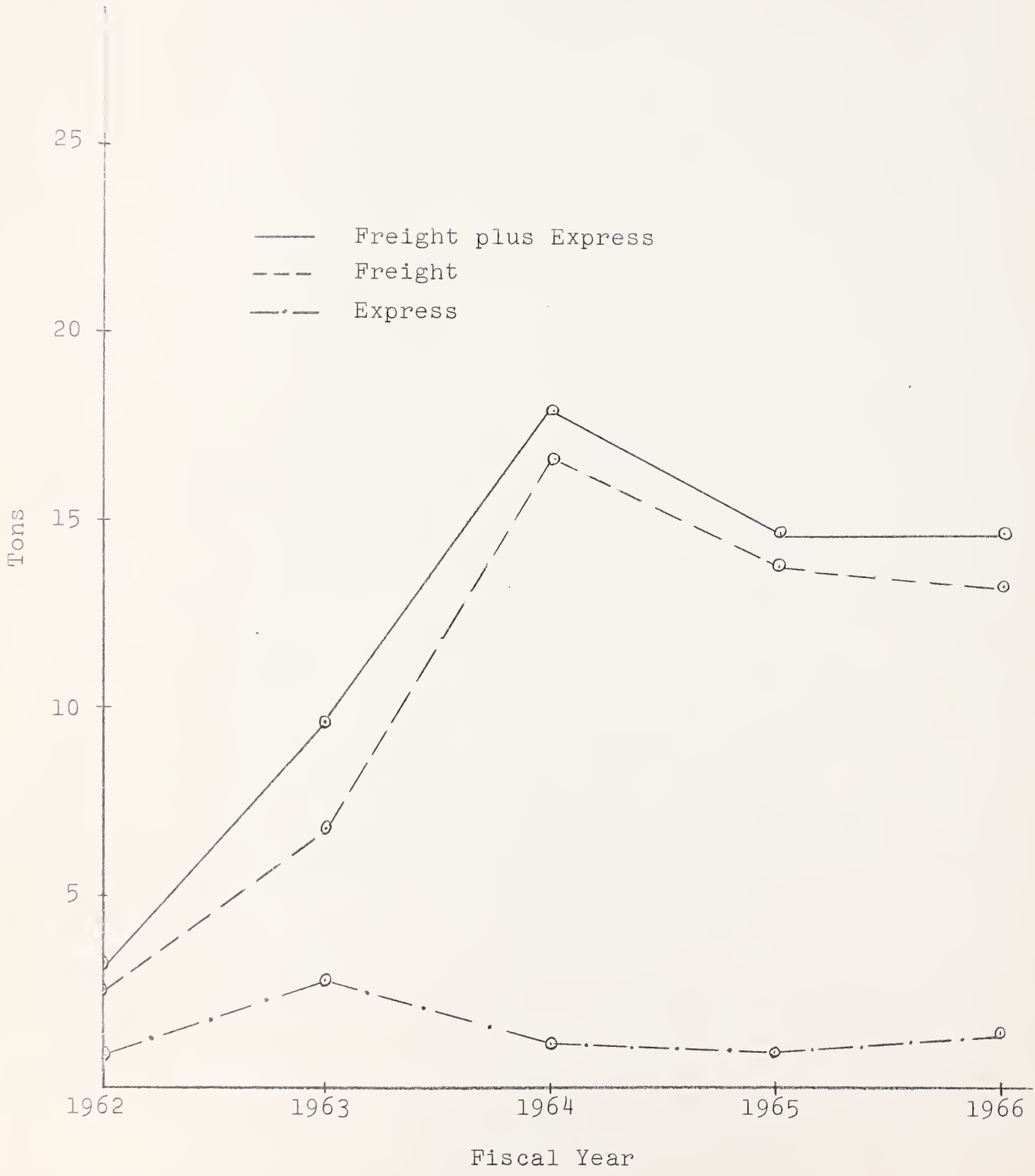
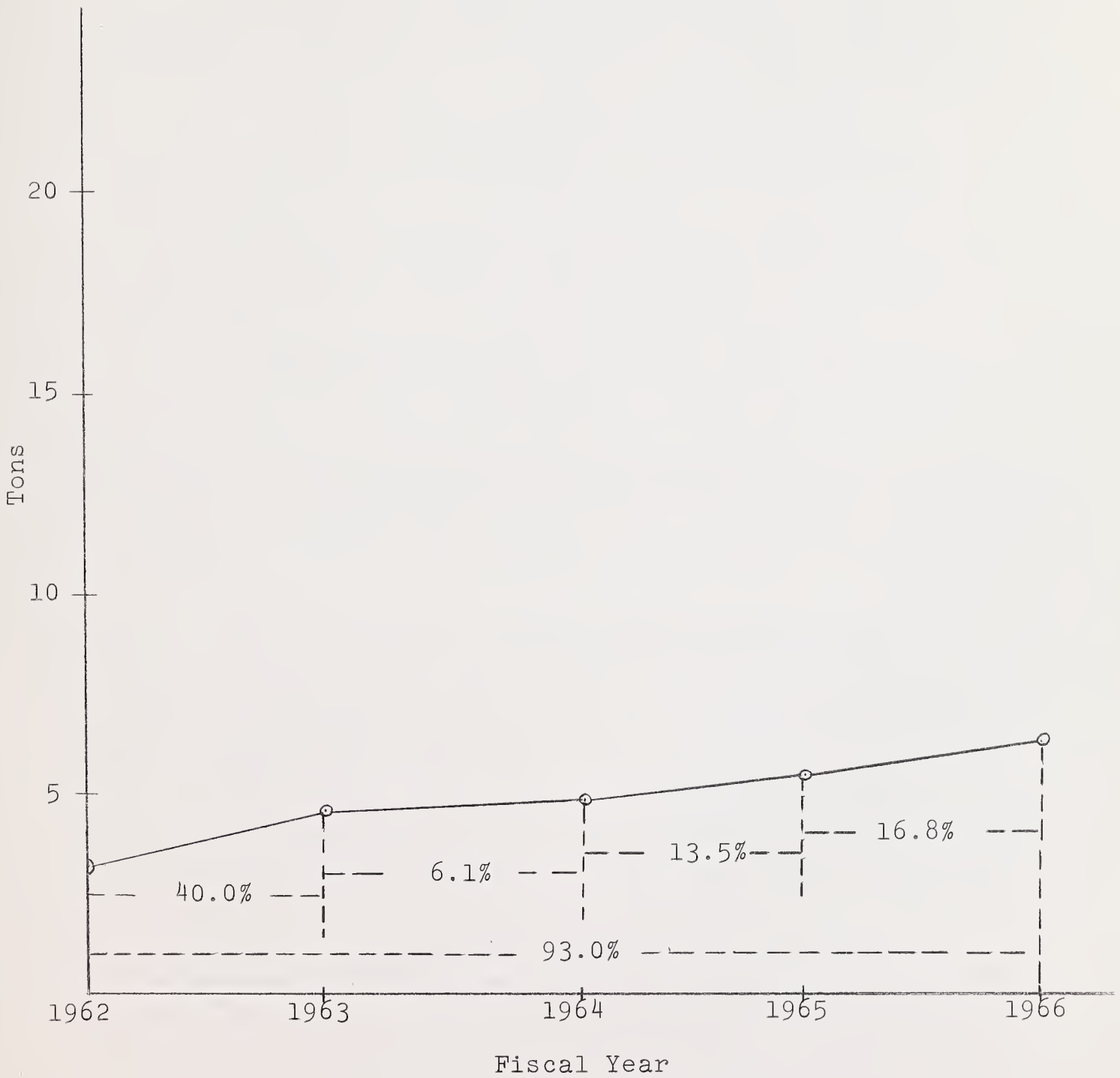


Figure 5:14. On Line Revenue Traffic - Total U.S. Mail Originations - Bozeman (Fiscal 1962-1966)



9. Merchandise can be turned over faster, cutting interest costs.

All of these, plus a multitude of other factors suggest that the amount of activity in the air cargo industry will rapidly increase between now and 1980.

The *U.S. News & World Report* in June of 1967, carried an article entitled, "New Boom on the Airlines: Rising Tide of Freight," which stated that:

> Air freight has exploded into a major business, promising to surpass even the surge in passenger travel by air.
>
> Shippers in droves are switching to air delivery of their products. They are lured by bigger, faster jets now coming of age.
>
> From many airlines come predictions that air cargo soon will be a bigger money-maker than the passenger business.

The article also states that Northwest Airlines freight revenue ton miles rose by ninety-eight percent in 1966 over 1965, and that forecasts for 1967 are for an additional fifty to sixty percent gain. This is of particular significance because of the importance of Northwest Airlines to air service in Montana.

The *Financial Analyst Journal* of October, 1967 carried an article on air freight by Mr. William F. Mason, who is air transportation analyst with F. S. Smithers & Company. This article discusses recent air cargo forecasts by the Lockheed and Boeing Corporations. Table 5:4 summarizes the rates of increase for the air cargo business as projected by Lockheed and Boeing for the periods 1965 to 1975 and 1975 to 1980. Table 5:5 contains projections for the state of Montana from 1970 to 1980 for freight, mail, and express. These projections are based on certain expected upper and lower limits of average annual growth rates for the State.

In summary, the projection of air cargo activity to 1980 is indeed difficult. The projections cited here are believed to be conservative when compared to growth rates being projected for the total airline industry in the United States by such authoritative sources as Lockheed, Boeing, and the Civil Aeronautics Board. If these freight, mail, and express projections are realistic, tremendous demands will be placed on Montana air terminals and associated facilities. It would appear, upon complete examination of the available data, that the airline industry is on the verge of a major boom in the air cargo industry.

Table 5:4. Projected Rate of Growth (for Domestic Freight, Mail, and Express to 1980) Lockheed Aircraft Corporation.

	Projected Average Annual Growth Rate (Percent)	
	1965 to 1975	1975 to 1980
Scheduled Freight	23.5	19.8
Scheduled Express	8.1	8.1
Scheduled Mail	15.0	4.7
All Air Cargo by U.S. Airlines Domestic	19.0	18.1

Projected Rate of Increase as Projected by Boeing for the U.S. Domestic Air Cargo Market to 1980

	Projected Average Annual Growth Rate (Percent)		
	1965 to 1975	1970 to 1975	1975 to 1980
All U.S. Domestic Air Cargo	20.5	15.0 to 27.0	10.0 to 14.0

Table 5:5. Projections for Freight, Mail, and Express for the State of Montana 1970 to 1980 (In Tons)

Year	Freight		Mail		Express	
	Lower Limit	Upper Limit	Lower Limit	Upper Limit	Lower Limit	Upper Limit
Average Annual Rate of Increase Assumed for Freight, Mail, and Express Projections						
1966-1975	20%	16%	14%	10%	8%	6%
1975-1980	17%	13%	4%	4%	8%	6%
1970	971	1111	672	775	192	207
1971	1126	1334	739	884	203	223
1972	1306	1600	813	1007	216	241
1973	1515	1921	883	1149	229	261
1974	1757	2305	972	1309	242	281
1975	2038	2766	1069	1493	257	304
1976	2303	3236	1112	1553	272	328
1977	2602	3786	1156	1615	289	354
1978	2941	4430	1202	1679	306	383
1979	3323	5183	1251	1747	324	413
1980	3755	6064	1301	1816	344	446

CHAPTER 6

AIRPORT FACILITY NEEDS

Airport facilities are an important factor in determining the type of service which airlines are willing or able to provide. The following discussion of present and future airport facility requirements in the State is based upon several sources including: (1) visits with airport managers and local airport commission members, (2) visits with representatives of the commercial airlines serving Montana, (3) Federal Aviation Agency publications (*National Airport Plan, Fiscal Years 1966 - 1970* and *Airport Capacity Criteria Used in Preparing the National Airport Plan*, (4) *The Airline Industry Survey of Airports* which was published in 1968 by the Air Transport Association of America, and (5) extensive consultation with the professional staff of the Montana Aeronautics Commission.

Montana's airport facility requirements are constantly and rapidly changing. Terminal and associated facilities are in need of expansion, and runways require development in length, strength, and use of navigation aids. These changing facility needs result from two basic factors: (1) the increasing demand for more and improved commercial air service which is reflected by the air traffic projections in Chapter 3, and (2) rapidly changing equipment being used by commercial airlines for faster and more efficient service. These facility needs are immediate in a number of Montana locations if commercial air service is to develop at the rate required to meet anticipated demands. In fact, immediate facility improvements may be necessary if some communities are to retain existing service.

Projected airport facility needs to 1980 are based upon the assumption that origin and destination passenger traffic projections (Chapter 3) will prove to be accurate. In addition to expected increases in commercial traffic, stated airport facility requirements reflect anticipated expansion of general aviation activity.

Present runway, taxiway, and apron requirements result from the utilization of two basic aircraft, the Boeing 727 and 737-200, by commercial carriers serving the major Montana cities of Billings, Great Falls, Bozeman, Butte, Helena, Missoula, and West Yellowstone. The Convair 580 is also used at many of these airports, but it is not a critical aircraft because of greater airport facility requirements for the jet aircraft. The Convair 580 or its equivalent is the critical aircraft in determining airport facility adequacy for Montana's seven smaller cities receiving commercial air service, which includes Havre, Glasgow, Wolf Point, Sidney, Glendive, Miles City, and Lewistown.

Both Northwest and Western Airlines are presently using jet equipment in Montana. Northwest is now using the Boeing 727 at the cities of Billings, Great Falls, and Bozeman. They have also expressed a desire to use the Boeing 727 aircraft at Butte, Helena, and Missoula as soon as these airports can accommodate such aircraft. It is assumed that this service will be inaugurated in the cities of Butte, Helena, and Missoula when the airports are adequately equipped for jet airplanes. Western Airlines is now serving all Montana cities in its system with the Boeing 737-200 aircraft. This includes the five cities of Great Falls, Billings, West Yellowstone, Butte, and Helena. It should be pointed out, however, that several of these cities are receiving 737-200 service from Western under severe payload penalties to the carrier and cities due to inadequacies of airport facilities to handle the 737-200 in full operation.

The Boeing 727 and 737-200 require both stronger and longer runways than exist at most Montana airports. Runway strength requirements are relatively higher for the Boeing 727 and equivalent type aircraft, while the critical factor for the Boeing 737-200 or equivalent is runway length. In essence, runway strength serves most often as the limiting factor for operation of the Boeing 727 type aircraft, while the limiting factor for the Boeing 737-200 type aircraft is most often associated with runway length.

Future airline industry plans may well call for the use of even larger equipment in Montana's major airports by 1980. The Boeing 727-200 or its equivalent will likely be in use in Montana well before 1980. This aircraft will require additional runway strength and possibly length over that needed for the 727 and/or 737-200. Two additional aircraft which could be put into service in Montana by 1980 are the Boeing 720B and 747 or their equivalents. However, little or no additional runway improvements would be required for these airplanes where facilities are fully adequate for the operation of the Boeing 727-200 and Boeing 737-200 type aircraft. It is possible, however, that aircraft such as the 720B would require additional runway if one assumes longer stage-lengths than now anticipated. It is assumed here that the Convair 580 type aircraft will be the largest to service Montana's eastern cities through 1980.

Six of Montana's airports are currently handling jet equipment of various types. Billings and Great Falls are presently served by both Boeing 727 and 737-200 aircraft. Helena and Butte are presently being served by the 737-200 and are to be served by 727 aircraft when airports are adequate to accommodate them. Bozeman is presently being served by Northwest using the 727 aircraft. West Yellowstone is receiving service from Western using the 737-200. It has

also been stated earlier that even though Missoula enjoys no jet service, Northwest is desirous of inaugurating such service when airport facilities are adequate.

Billings is presently handling 727 and 737-200 flights, however, increased runway length and strength is needed to fully accommodate such service. Similarly, Great Falls needs both longer and stronger runways to accommodate present service. Helena, Missoula, Butte, and West Yellowstone require lengthened and strengthened runways for 727 and 737-200 aircraft. (The Butte case will be discussed separately due to other limiting factors.)

Kalispell may offer a market for jet aircraft, however; it will also be discussed separately due to several complicating considerations. Bozeman, with its recently completed runway extension, is the only Montana community served by jet equipment which does not require runway or taxiway improvements at the present time, however, additional length would be needed for Boeing 737-200 operation. With recently completed facilities in Wolf Point and improvements now being made in Glendive, all of the small eastern Montana cities except Sidney can handle the Convair 580 aircraft. An improvement is planned for Sidney in the near future.

Future Runway Needs

The anticipated needs for 1980 are all based on the assumption that present needs, as outlined previously, will have already been met. It is not being suggested, however, that a two phase runway improvement program is best. Immediate improvement to meet present and anticipated 1980 needs may or may not be a more efficient and practical approach. In addition, it must be assumed that regular maintenance of facilities is performed as needed.

Every airport in the State will require significant runway and taxiway improvements between now and 1980. Billings and Great Falls may both require parallel runways due to anticipated flight frequency increases from both general and commercial aviation. Billings, Great Falls, Helena, Butte, Bozeman, and Missoula will all need strengthened runways and taxiways in order to handle Boeing 727-200 or equivalent aircraft. Bozeman and Missoula will need longer runways for Boeing 737-200 or equivalent equipment. West Yellowstone may need stronger runways by 1980 for Boeing 720B and 747 equipment. The West Yellowstone market is highly volatile and therefore difficult to predict. However, the distinct possibility of long-haul, charter type service

indicates that at any time the airport might need to handle very large jet aircraft flying long stage-length flights. Montana's eastern cities will require extensive runway, taxiway, and ramp improvement by 1980 if jet equipment is introduced by Frontier Airlines.

Apron and Navigational Needs

Requirements for apron (ramp) facilities change as new and more equipment is introduced. Aircraft which require strengthened runways also require corresponding improvements in apron construction. Increased flight frequency and larger equipment make it necessary to expand and strengthen apron areas. Immediate apron improvements are needed in at least five cities. The Missoula apron area needs reconstruction and strengthening. Billings, Great Falls, and West Yellowstone require expanded apron facilities. However, before 1980 all major airports in the State will need improved and expanded aprons. Apron improvement needs are closely associated with both increased demands from commercial and general aviation. General aviation apron and tie down area needs are pressing at all fifteen Montana air carrier airport cities.

Navigational aid improvements are needed at all major Montana airports. Of immediate importance are relocation and addition of navigational aids in Helena, Butte, Bozeman, and West Yellowstone. Additional approach navigational aids are needed at every major State airport. As runways are extended and improved, navigational aids must be relocated and added. Hence, as the needed runway and taxiway improvements are made, navigational aid requirements will change. Additionally, in the case of an airplane such as the Boeing 747, runway lighting must be moved due to engine positions on the wings of the aircraft. It should be a goal to establish instrument landing systems at every major airport where it is physically feasible. This is particularly important in view of the many weather problems which can disrupt Montana air service.

Present and Future Terminal Needs

Adequate terminal facilities are important to the efficient and convenient operation of any airport complex. Not only is the terminal building itself important, but also the associated facilities such as auto parking. Present terminal needs are most urgent at Great Falls. An entirely

new terminal complex is needed immediately and should include facilities for both commercial and general aviation. Plans are underway in Great Falls for such a complex. Terminal remodeling and expansion are needed in Bozeman and West Yellowstone. In most cases present improvements could be the first phase of a long-term expansion project. Improved auto parking facilities are needed at all airports.

By 1980, *major* terminal improvements and complete relocation will be required in Missoula, Helena, and Billings but minor expansion and other changes may be required in the interim period. In each case a new terminal complex will be needed. Bozeman and West Yellowstone will need to complete their terminal expansion projects by 1980. Terminal improvements may also be required in Wolf Point, Sidney, Miles City, and Glasgow as traffic increases.

Butte Needs

Airport facility needs at Butte are here discussed separately due to several unique problems. Butte has the same problems of runway length and strength which affect most other Montana airports. However, other physical factors, primarily mountains, will likely restrict the use of jet equipment even if runway improvements are made. Additionally, there is disagreement over the actual physical feasibility of extending the existing runways to an adequate length for full operation of jet aircraft such as the Boeing 727, 727-200, and 737-200, all of which could be used at Butte in the next few years.

In view of these inalterable physical limitations at the present location, it is highly recommended that the entire Butte airport situation be carefully studied to determine the advisability of relocation of the airport. The Butte airport serves a trade area which includes Anaconda and Deer Lodge, both of which are distant from the present airport site. Thus, a new location might better serve the Butte trade area, as well as eliminate the existing physical limitations. Such a study should include engineering analysis of physical factors and economic analysis of how best to provide for the public convenience and necessity. The decision may not be to move the airport, but the situation should be critically examined before further investment is made in the present facility.

Kalispell Needs

The Flathead County airport facility needs are greatly complicated by the rapidly expanding nature of the Kalispell trade area which, to date, has not had major air service. Earlier in this report it is suggested that Kalispell may have the greatest amount of untapped traffic potential of any Montana market. In view of this, it is suggested that a study be undertaken to fully examine traffic potentials and requirements in the Kalispell area. It is presently evident that the needs of the public are not being satisfied. By 1980, the Kalispell market should be able to support similar service to that now existing in Bozeman, Helena, Missoula, and Butte. This will require an airport which can handle jet aircraft. An additional factor influencing Kalispell traffic is the possibility of serving the Glacier Park area from a Kalispell airport. All of this means that airport facility needs are considerable at Kalispell. The exact nature of immediate and future facility needs can best be determined through a comprehensive study in the trade area.

Conclusion

Airport facility needs - including runways, taxiways, aprons, navigational aids, and terminals and associated facilities - are an important facit of total aeronautics planning for the state of Montana. The preceding discussion is brief, but is intended to give general indications of immediate and future needs at Montana's several airports. The satisfaction of these needs is important to continued and expanded air service in Montana. Table 6:1 outlines airport facility needs by city for the present and for 1980.

Table 6:1. Airport Facility Needs by City for the Present and 1980

City	Critical Aircraft		Runway Needs		Terminal Needs		Other Facility Needs	
	Now	1980*	Now	1980*	Now	1980*	Now	1980*
BILLINGS	B737-200 B727	B727-200 B747	strength and length	strength and parallel runway	parking; floor space expansion	new terminal complex	apron expansion; approach navigational aids	improved aprons
GREAT FALLS	B737-200 B727	B727-200 B747	strength and length	strength and parallel runway	new terminal complex	adequate	approach navigational aids	improved apron
MISSOULA	B727	B727-200 B737-200	strength and length	strength and length	floor space expansion	new terminal complex	apron reconstruction; approach navigational aids; addition paved area for gen. aviation	improved apron; instrument landing system
HELENA	B737-200 B727	B727-200	strength and length	strength	floor space expansion	new terminal complex	apron reconstruction; navigational aids; approach navigational aids	improved apron; instrument landing system
BUTTE	B737-200 B727	B727-200	strength and length	PENDING SUGGESTED STUDY FOR TRI-CITY AIRPORT**				

Table 6:1. (cont.)

City	Critical Aircraft		Runway Needs		Terminal Needs		Other Facility Needs	
	Now	1980*	Now	1980*	Now	1980*	Now	1980*
BOZEMAN	B727	B727-200 B737-200	adequate	strength and length	floor space expansion and remodeling; parking	major expansion	navigational aids; approach navigational aids	improved apron; instrument landing system
KALISPELL	PENDING SUGGESTED STUDY FOR KALISPELL TRADE AREA**					new terminal building	approach navigational aids	improved apron; instrument landing system
WEST YELLOW-STONE	B737-200	B747	strength and length	strength	floor space expansion	floor space expansion	apron expansion; navigational aids; approach navigational aids	improved apron; instrument landing system
EASTERN MONTANA CITIES	Convair 580	Convair 580	adequate with planned projects	extensive improvements	expansion and remodeling at most locations	expansion at most locations	Non directional beacon; improved lighting	improved apron

*1980 needs assume previous completion of present needs.
**See special discussion in text.

CHAPTER 7

A RECOMMENDED PATTERN FOR THE DEVELOPMENT OF MONTANA'S AIR TRANSPORTATION SYSTEM

INTRODUCTION

Man is an imperfect soothsayer; though imperfect he may be, he must engage in the effort. This report has attempted to isolate, identify, and quantify those factors which largely determine the demands for air service and associated services and at the same time, to mold the pattern and rate of air service development in the state of Montana.

Factors such as population trends, income trends, employment trends, changes in patterns of growth are all covered in detail in Chapter 1. Historic use of existing commercial air service, inter- and intrastate air travel, etc., have all been isolated and projected into the future. The historical background material is found primarily in Chapter 2 and Statistical Supplements No. 1 and 2.

Projections of passenger traffic are found by market by year to 1980 in Chapters 3 and 4. Air cargo projections are contained in Chapter 5 for the state of Montana by year to 1980. These projections lead to certain conclusions about the future. On the basis of these, policy decisions can be made and action program initiated to meet the future demands for air service in the state of Montana.

AIR SYSTEM DEVELOPMENT FOR MONTANA

With the traffic increases and growing markets projected in this report to 1980, it is desirable to develop a planned system for air transportation both within the State and between Montana cities and major out-of-state markets. In such a planned system, it is apparent that three basic needs must be met -- three separate system developments must occur. Two of these are primarily directed at satisfying Montana's out-of-state air needs and the other is directed at satisfying the in-state air traffic demands.

It is important, first of all, to develop increased service to and from the air hubs of Billings and Great Falls

in the state of Montana. Efforts should be directed at strengthening their position as air hubs over the next ten years in order to provide better service for all Montana people. Planning should be directed at providing these cities with direct, frequent, non-stop, one-carrier, one-plane service to major state and city markets outside Montana. Non-stop service should be provided both in east/west and north/south directions to at least the cities listed below. These lists of cities should not be construed as being inclusive of all potential markets.

North/South

First Priority	Second Priority
Salt Lake City	Las Vegas
Denver	Phoenix
San Francisco	Kansas City
Los Angeles	

East/West

First Priority	Second Priority
Seattle	Spokane
Minneapolis	Portland
Chicago	New York
	Philadelphia
	Washington, D. C.

Montana cities and the Montana Aeronautics Commission should avail themselves of every opportunity to encourage this kind of service. The need for direct service to California is so critical that forceful action should be taken soon to improve that service. It is recommended that these first priority cities be considered in the very near future for long-haul, non-stop flights from the Montana air hubs.

Salt Lake City, Denver, Minneapolis, and Chicago are very important connecting points for air traffic to other markets as well as being important origin and destination markets themselves. Seattle is the most important city market for Montana traffic. As previously mentioned, the California cities of San Francisco and Los Angeles are important markets. All these markets will warrant non-stop service in the near future.

It is important that long-term planning toward this goal of long-haul, non-stop service for these markets be

undertaken. It is also important that, as Montana air traffic grows in the future, certain extensions of this long-haul market be considered. The cities listed as second priority are examples of such markets. As demands for air service grow, it is not unreasonable to think that frequent, long-haul flights to these markets from the major Montana air hubs of Billings and Great Falls will become necessary.

Following from this, it is important that the cities of Billings and Great Falls be provided with systematic scheduling from all other cities in Montana. This is important inasmuch as it would be in the interest of the entire State to further develop the "air hub" nature of these two cities. As more demand is put on these two cities for this purpose by all other communities in Montana, it will be easier to obtain and maintain the long-haul service outlined above.

In conclusion, it is strongly recommended that a strengthening of the intrastate air service patterns, as they revolve in large part around the Billings and Great Falls markets, be pursued through cooperative planning by all carriers operating in these markets. This recommendation is noted here somewhat in anticipation of what will be said shortly concerning all of the other air markets in Montana.

The second system development which must occur in Montana in anticipation of future air traffic demands revolves around what will be termed the major air markets in Montana, which include the cities of Bozeman, Butte, Helena, Kalispell, and Missoula. They are termed major air markets to distinguish them from the major air hubs of Billings and Great Falls. Kalispell is included in this designation due to the strong indications of its potential future expansion. Thus, the second system development is essentially that of the development of five major air markets for the State. To achieve this, two distinct services must be provided these cities as part of the master system of air travel for Montana.

First, these major air market cities should be provided with high frequency, one-carrier, one-plane service to the major out-of-state points of Spokane, Portland, Salt Lake City, and Denver. The city of Seattle, as the major Montana market, could easily be served either as a non-stop by itself, or as an extension of the flight to Spokane. These five cities serve as out-of-state air hubs for Montana traffic, much as Great Falls and Billings do within the State. Specific mention of these markets does not exclude possible service to other markets as demands warrant such additional direct service. Emphasis is placed on these five cities, in addition to Billings and Great Falls,

because of their recognized function as connecting and/or terminal points for Montana traffic. After reaching any of these seven cities, good connections can be made to markets nearly anywhere in the United States.

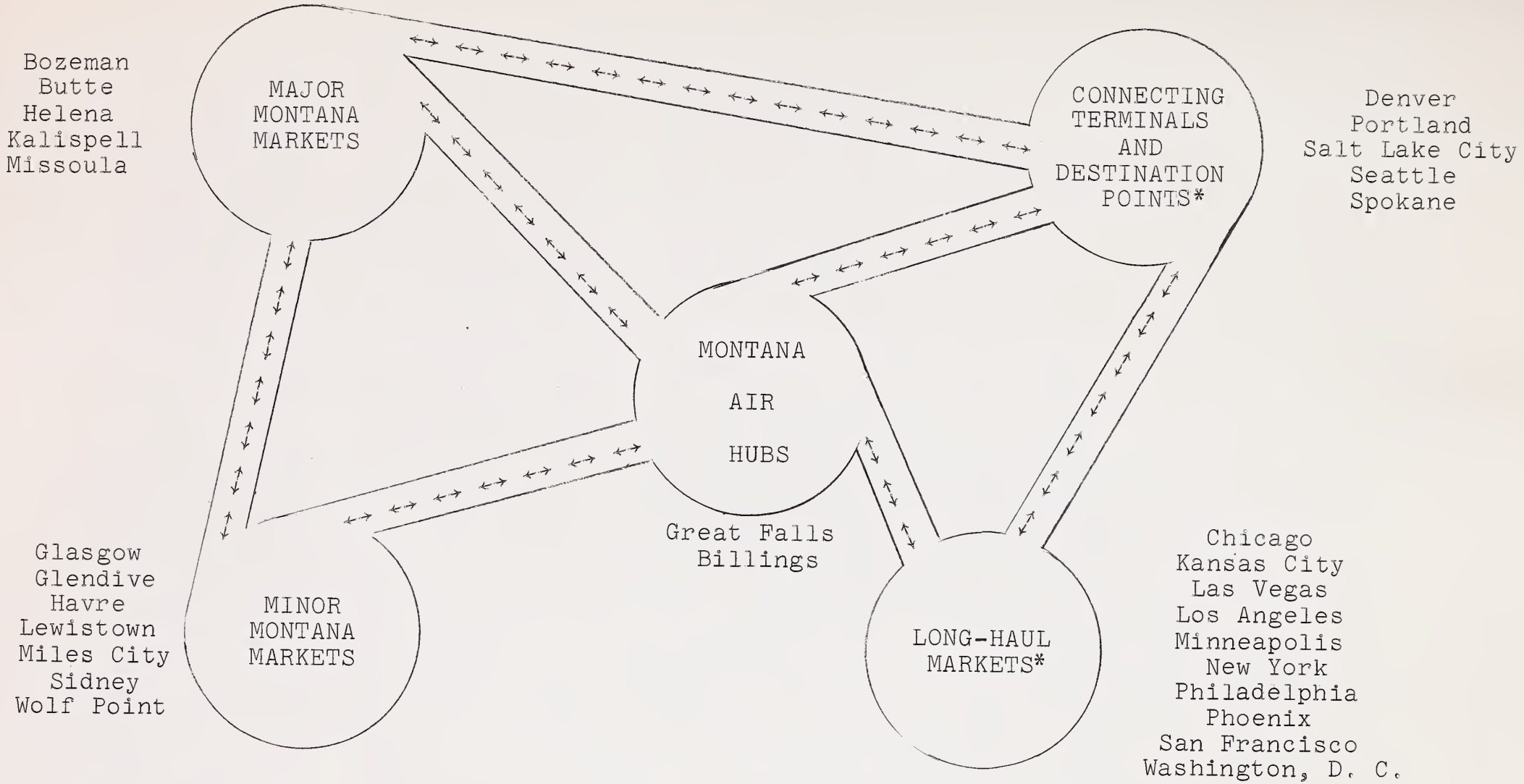
This type of service is recommended for these cities because market experience and projections indicate that they can support it. Secondly, such proposed service would provide substantial improvements in the service to these cities at the present time. Markets anywhere in the United States can be readily reached with this service pattern. It should also be stressed that in this system these cities will also have direct, frequent service to the Montana air hubs of Billings and Great Falls.

It is emphasized in this study's recommended service network for the state of Montana that the major points of Bozeman, Butte, Missoula, Helena, and Kalispell be mainly linked to seven major rotating or connecting terminals which include Billings and Great Falls. It is apparent that service will exist from these communities to certain other long-haul markets. In no way should this be discouraged, but rather it should be encouraged. However, this should not be viewed as the first priority need for these communities. It is suggested that the most important points beyond Billings to the east for these cities are the markets of Minneapolis and Chicago. The most important southern point beyond the seven hubs is California. These are overwhelmingly the most important, in terms of origin and destination traffic and in terms of being used as rotating terminals.

The third and final part of the development of a complete system of air transportation for the state of Montana deals with what are designated as the minor air markets in the State. These are the markets of Glasgow, Glendive, Havre, Lewistown, Miles City, Sidney, and Wolf Point. The critical need is for an efficient system to connect all of these cities with the two major air hubs of Billings and Great Falls and with the capitol city of Helena. Improved frequency and scheduling to these three points is an absolute necessity.

The development of an effective intrastate system is an integral part of long-term planning for Montana air service. These developments must take place over time as part of a progressive plan to upgrade air service consistent with meeting current and anticipated needs or demands. The development of an intrastate air system to serve the smaller communities of Montana must take place now, if the public convenience and necessity are to be served. Figure 7:1 shows the recommended air transportation system for the state of Montana.

Figure 7:1. Recommended Montana Air Transportation System.



*The possibility of other significant markets for direct Montana traffic is very real and should not be ruled out.

The first priority need for the minor air markets is to provide direct, frequent service to Billings and Great Falls. Helena service is a close second, or number two priority. Third priority needs in this area of intrastate travel are for providing direct, one-carrier service to and from Bozeman and Missoula and every other city in Montana. Bozeman and Missoula are emphasized because of the location and functions of the major state universities in these cities. This service need is rapidly becoming critical. There exists an important and growing interest between these university communities and all of the other cities in the State. As part of the master system for air service development in Montana, this minor market service definitely warrants special attention. In summary, it will be important to tie in the minor air markets in the State with the two major air hubs as well as with the three major air markets of Helena, Bozeman, and Missoula.

One additional consideration of a minor market system in the State deserves attention. It is entirely possible that new communities in the State will develop air service needs sufficient to bring them into the system in the future. The two markets of Dillon and Cut Bank/Shelby are possibilities. With the rapid expansion of air transportation, it is not unreasonable to think that even other Montana communities will require air service in the future. Any system of air transportation development for the State should be prepared to add these communities to the system as their market demand warrants.

West Yellowstone has not yet been worked into this discussion because of the unique nature of this market. The needs for additional service into West Yellowstone fall into two categories. The first involves year-round operations which are anticipated for West Yellowstone by the mid-1970's. It is likely that the winter recreational complex surrounding West Yellowstone and Yellowstone National Park will have developed by that time to make year-round air service important and economically feasible on a limited basis.

The larger and higher volume needs for the community of West Yellowstone center around the undeveloped eastern markets. The top fifteen markets at West Yellowstone in terms of their order of importance were presented in the West Yellowstone Service Investigation Case, Docket No. 17347, in Montana Aeronautics Commission Exhibit 916. These states in order of importance are as listed on the following page.

1. California	6. Texas	11. Minnesota
2. Montana	7. Washington	12. Wyoming
3. Utah	8. Colorado	13. Wisconsin
4. Illinois	9. Ohio	14. New York
5. Idaho	10. Michigan	15. Iowa

An examination of these top fifteen states reveals that service is now being provided in the markets of California, Utah, and Colorado, and all states to the south. It is also clear that the states of Montana, Idaho, and Wyoming are not likely to be states using air service to visit the Park. The markets east of Billings and Denver remain relatively isolated from West Yellowstone because there is no carrier operating in the East and serving the Park. It is thus suggested that direct routes to the East be sought for the West Yellowstone market on a seasonal basis. Routes out of the Chicago, Minneapolis, and New York areas suggest themselves as the most feasible in view of their importance in supplying visitors to the Park. It should be pointed out that the state of Iowa, which is ranked as fifteenth most important, still sent approximately 60,000 visitors to the Park in 1965. Therefore, it is evident that there are large numbers of people traveling annually from the eastern markets to the Park.

The potential for further expansion of the western and southern markets is also assumed to be important to West Yellowstone in the future, but the large effort for increased service should be oriented toward the East.

Montana service into Canada is currently being provided through the Great Falls International Airport. The service is twice daily, one-carrier, non-stop between Great Falls and Calgary, Alberta. Because changes in volumes of international traffic are subject not only to changes in basic economic factors in both Canada and the United States, but also to changes in factors of political origin, no attempt has been made to project this volume of traffic. However, in Chapter 3, the importance of this traffic is recognized and estimates are made for the years 1965, 1966, and 1967. During this time period the traffic nearly doubled. On the basis of this limited information, one must expect future demands for this service to increase. In addition to other considerations, the feasibility of frequent service to Edmonton, Alberta should be critically examined. Further reason for careful study of Canadian traffic potential is that many Canadians visit Glacier National Park and the Kalispell recreation area.

Montana Air System - Suggested Improvements in Competitive Structure

The system of air transportation anticipated for the state of Montana in the future should work for increased competition in several markets. There is actually no competition at the present time in the Montana/California market. Service into the Montana/California market is listed as the highest primary need for improved service in the state of Montana at the present time. It is strongly suggested that all steps possible be taken toward the introduction of a second or competitive carrier into the Montana/California market in the near future.

Region 6 is also a market of prime importance to all Montana cities, and there is no competition at all existing in that market at the present time. It is anticipated that over the next few years, this market will become important enough to warrant the addition of a second carrier, primarily into the cities of Spokane, Seattle, and Portland.

Northwest Airlines at the present time has a complete monopoly of nearly all east/west movement of people to and from Montana. It is suggested that it would be healthy for the increased development of these markets to have a competitive carrier offering east/west service to Montana. This statement has special reference to the two large air hub communities of Billings and Great Falls. It is strongly urged that the state of Montana actively seek to develop competition among carriers to east/west markets of the United States, if and when such competition is feasible. Certain applications now filed before the Civil Aeronautics Board may result in route cases which provide for such an opportunity. It has been mentioned earlier that there is presently competition in the Denver market, but this is not true for all of the large Montana cities. Over the next five to ten years, efforts should be made to increase the amount and degree of competition in this market.

To summarize, the following are considered to be important markets in which competition or second carriers should actively be sought by the Montana Aeronautics Commission and communities of Montana.

1. Service to California with special attention to Los Angeles, San Francisco, and Salt Lake City as a gateway.

2. Service to the states of Oregon and Washington with special attention to Seattle, Spokane, and Portland.

3. Service to the East including, but not limited to, such points as Minneapolis, Chicago, New York, and Washington, D. C.

4. Service to Denver.

MONTANA AIR SYSTEM - SERVICE IMPROVEMENT PRIORITIES

Improved Service to California and Salt Lake City

As one studies the historical air patterns of Montana, it is clear the Montana people have an extremely strong community of interest with California. San Francisco and Los Angeles are listed as major markets in terms of origin and destination passengers for every Montana city without exception. These markets ranked high in terms of their importance as major city markets, and the state of California is the top state in terms of the interchange of people with Montana according to historic traffic patterns.

Coupled with this, however, is the fact that direct service between California and Montana is either poor or totally lacking for every Montana city. Only two flights by Western Airlines pass through Montana and terminate in California. Both Great Falls and Butte have two flights daily to Los Angeles. The Great Falls flights stop three and seven times respectively, between Great Falls and Los Angeles. The Butte flights stop two and five times between Butte and Los Angeles. This is one-plane service, but it is hard to argue in favor of its frequency or convenience because of the many stops involved. Helena, on the other hand, has only one daily flight to California which stops six times. There is no one-plane, and in most cases not even one-carrier, service which would allow the people of Billings, Missoula, and Bozeman to fly directly into the Los Angeles market.

The service to San Francisco is even worse. There is not a single city in Montana with direct, one-plane service to San Francisco. This includes not only the two major air hubs of Billings and Great Falls, but also the other four major cities of Missoula, Butte, Helena, and Bozeman. Yet, despite this kind of past and present service, these California cities were very important historic markets for all of the cities of Montana.

A comparison with the Denver, Seattle, and Spokane markets reveals not only more frequent service than to California, but also service of a much more direct nature. Colorado and Washington are the next most important states after California, according to the historic traffic data of Montana.

Further examination shows that Montana cities do not have adequate service to Salt Lake City, which serves as a California gateway for connecting service. There are only two frequencies per day between Billings and Salt Lake City. These flights carry all of the Salt Lake City traffic, as well as the traffic traveling to California and other markets beyond Salt Lake City. This is not jet service, however. It is service by Frontier Airlines with Convair 580 equipment. The Great Falls market, on the other hand, has four flights daily to Salt Lake City. Two of these are the same flights which continue on to Los Angeles. The cities of Missoula, Helena, and Bozeman each have one flight daily into Salt Lake City, while Butte has three flights.

In conclusion, it is absolutely clear that the Montana service to the California market needs immediate improvements, if the public convenience and necessity for California service is to be adequately served. There is little doubt that tremendous increases would result in the Montana traffic to California if more direct service were available. These markets have responded amazingly well to highly inadequate service. It is thus concluded that the single most important air need of the state of Montana at the present time is improved service to California.

A. Improved Service to the Kalispell Area

B. Improved Service to the Eastern Montana Cities

The number two priority for improved service is thought to be the two problems of improved service to Kalispell and improved service to the Eastern Montana cities. These are ranked together in terms of priority, even though it is fully recognized that they are completely independent problems.

A. An examination of historical data and a comparison of trade areas and their economic profile, demonstrates that the largest untapped air market in Montana is at Kalispell. The Kalispell market is comparable to such markets as Bozeman and Helena in many respects. The traffic increases that could be generated in the Kalispell market with improved service and frequency are projected to be substantial.

The Kalispell market is developed to an even lesser extent than was the market at Bozeman prior to recent service improvements to that market. In short, it is the conclusion of this study that the Kalispell market is a "sleeping giant" in terms of the kinds of increases that could be expected in that market with improved service. It is thus strongly recommended, that action be initiated to improve service for the people of the Kalispell trade area. The public convenience and necessity of the people of this area is clearly not now being met by the service to that market. The present service is judged to be totally inadequate in terms of equipment, frequency, and choice of alternative routes in meeting present air needs. Direct routes to the south are badly needed as well as increased frequency in the east/west market.

Another factor which makes Kalispell and its development increasingly complex is the need for direct service to Glacier National Park on at least a seasonal basis. It is suggested that detailed research and groundwork needs to be done, in close cooperation with representatives of prospective carriers, the Civil Aeronautics Board, the Bureau of Operating Rights and their analysts, the Glacier National Park Company, the National Park Service, and many others in the area, to solve most effectively the air service problem to Glacier National Park.

The two major alternatives which continually suggest themselves are either the construction of a new airport facility at East Glacier, or the development of service at Kalispell adequate to serve the Glacier Park area with cooperation from the Glacier Park Company. It is evident from experiences at West Yellowstone and other National parks that service to Glacier could certainly be justified. It is not clear, however, which one of the alternative approaches would be the best. The solution is not an easy one, but the problem should be studied, and direct action programs should be suggested and implemented by the parties involved to provide the best service for the state of Montana, the area of Kalispell, and Glacier National Park. No specific recommendation is being made in support of either of these alternatives, but a definite plan of action relative to them needs to be developed now.

B. Upon examination of the service provided to the seven Eastern Montana cities and the potential markets and needs of these cities, it is clear that the public convenience and necessity is not being served adequately with one round trip service per day. This simply does not adequately serve these cities or allow them to develop their air market to anywhere near the degree that they could

develop. It is fully recognized that these are sparse markets and that they are, in many instances, "use-it-or-lose-it" points. But, it is equally clear that these markets have not been permitted to develop to their potential because of the kind of service and schedules that they have had.

It is suggested that a solution must be found, relative to these markets, which will give them additional frequency and tie them in as completely as possible to the air service system of Montana, as well as linking them directly with the major points of Billings, Great Falls, and Helena. Increased frequency and improved scheduling and routing seem to supply the best answer for a solution to this problem. This problem is not going to be easily resolved because of the small size of these markets. However, improved service to Eastern Montana must be recognized as a critical problem for the communities involved and for the state of Montana.

Improved Service to the Capitol

Present air service to the capitol of Montana is highly inadequate. Butte is the only city within the state of Montana with more than two daily frequencies to Helena. This is unquestionably not the most important segment of the service to Helena because of the relatively short distance separating these two cities. Billings, Great Falls, and Missoula have two round trip frequencies per day to Helena, while the cities of Bozeman and Kalispell have only one round trip daily. The cities of Eastern Montana have no direct service to Helena at all. It is clear that the state of Montana needs to improve service from these cities of the State to Helena. Effective and usable service is now lacking in most instances. It is highly questionable whether good intrastate air service to Helena can ever be provided on a reasonable basis as a by-product of trunk and regional operations of several carriers, all of which have long-haul markets as their main concern. A trunk cannot serve both needs simultaneously and expect to get the job done. Its emphasis continues to be the long-haul market and not the provision of local service between Montana city pairs.

Improved Service to Denver

The existing service to Denver out of Billings and Great Falls is frequent. Two carriers actively operate

in these markets. An examination of this Denver service to both Billings and Great Falls does, however, reveal that even though the flights are frequent, the quality of service in terms of the number of stops is not extremely desirable. Billings has only one flight to Denver with less than two stops, while Great Falls has only one flight with less than three stops. Missoula and Bozeman are provided with only multiple stop one-plane service, while Butte and Helena have no one-plane service at the present time into the Denver market. All statistics continue to identify Denver as a major market for all of these cities including Missoula, Bozeman, Butte, and Helena. Not only is Denver important as an origin and destination point but also as a connecting terminal point.

Improved service to Denver, especially for the cities of Missoula, Butte, Bozeman, and Helena suggests itself as a problem which needs attention. None of the four cities has competitive service into the Denver market as is enjoyed by Billings and Great Falls. It is concluded that the Billings and Great Falls service is adequate at the present time into the Denver market. But improvements are needed in the cases of Missoula, Butte, Helena, and Bozeman. It is also quite certain that in the future, improvements in service will be needed for Billings and Great Falls as well.

CONCLUSION

In summary, air system development for Montana should have three purposes. First is the increased development of the two major air hubs for the State. Emphasis will be placed on providing long-haul, non-stop, one carrier, one-plane service to major out-of-state markets. Second is the development of the major air markets of the State which will be tied into the seven air hubs of Seattle, Spokane, Portland, Sale Lake City, and Denver, in addition to Billings and Great Falls. These will be used for both terminating and connecting purposes with Montana cities. The third purpose of the system is to provide an effective intrastate network of air travel. Emphasis has been placed on connecting the smaller (minor) air markets in the State with the cities of Billings, Great Falls, Helena, Bozeman, and Missoula. Such a pattern of air service in Montana is believed to be the best way to meet the needs of the State as they are today and as they are expected to be in the future.

STATE OF MONTANA

TIM BABCOCK, GOVERNOR

DEPARTMENT OF PLANNING & ECONOMIC DEVELOPMENT

(406) 442-3260

CAPITOL POST OFFICE
HELENA, MONTANA 59601

SAMUEL J. CHAPMAN
DIRECTOR

January 16, 1968

MEMORANDUM

To: ALL CITY-COUNTY PLANNING BOARDS AND MAYORS

From: Department of Planning

Subj: Invitation to Question-and-Answer Meeting Pertaining to HUD Planning Programs

The Presidents of all City-County Planning Boards and their Mayors are invited to attend a question-and-answer meeting with Mr. Donald L. Pollard, Director, Planning Branch, Department of Housing and Urban Development, to be held on the evening of January 24, 1968. Mr. Pollard will be accompanied by Mr. John R. Merrill, Planning Requirements Officer, Northwest Area Office, Seattle. There will be a meeting from 3:00 P.M. to 5:00 P.M. followed by a no-host prime rib ($3.25) dinner at 6:00 P.M., all at Jorgenson's Holiday Inn. The meeting will continue after the dinner. Please notify this office prior to January 22nd if you plan to attend. Due to limited facilities, it is requested that not more than one delegate from each Planning Board, in addition to the Mayor, attend.

William A. Comer
Chief, Planning Division

Rural Area Development

cities may control the hinterland

news releases to educate the people about Multi county districts

get into the montana Horizons

---

zoning publisity publicity

Montana Citizen planning + zoning

M Horizon - send to Jim Debree

Montana League - article

---

every on will send in an article

rural zone to multi county

planning pays

articles - on Education Rex Cambel

Agricultural will be dictated to from out side

some choise